March/April 1998 $2.50

MONTANA OUTDOORS

Our Point of View

When you think about Montana's fish, wildlife and parks, what comes to mind? They are certainly among the finest in the nation. However, many folks I talk to fear the opportunity to enjoy them may be lost, slowly but steadily. Some wait and worry. Others are stepping forward and it is making a difference.

Our "1997 Annual Report," which appears in this issue beginning on page 12, highlights a number of milestones and accomplishments made possible through your help. For example, with your financial support we now have: over 100,000 acres in conservation easements to protect critical habitat; hunting access agreements with 942 landowners, covering 7.5 million acres; 93 completed stream and lake improvement projects; and improved access and visitor services at a number of popular state parks.

Many Montanans also have shared increasingly of their time and talents. The number of state parks volunteers has grown from 230 in 1993 to more than 1,130 today. In 1997, 10 stalwart volunteers were honored for having taught two generations of Montana hunters over the entire 40-year history of our Hunter Education Program. And more than 300 Montanans have now stepped up to teach fishing and aquatic education at clinics and special events through the Family Fishing Adventures Program. Enactment of a "Free Fishing Day" will now encourage entire families to participate in this lifelong activity.

Other volunteers helped monitor watercraft on lakes in the Flathead Valley, served on groups that led to the purchase and lease of five fishing access sites on the Ruby River, and helped develop a hunting ethics partnership for the continued success of our private land hunter access program.

Using appropriate technology also is helping....Computers are now aiding greatly in enforcement efforts. Mobile laser shooting ranges are providing exciting shooting opportunities for young and old. FWP's award-winning Internet web site is reaching people far and wide. Approval of a new automated licensing system promises to make purchasing hunting and fishing licenses easier beginning in the year 2000.

Can we maintain our traditions? We can...with your help!!! Montana—it's our way of life.

Pat Graham

Patrick J. Graham
Director—Montana Fish, Wildlife & Parks

PHOTO BY MIKE BARLOW

LANCE R. PECK

How do newly hatched monarch butterflies find their wintering grounds 2,500 miles away? See page 2.

State of Montana
Marc Racicot/Governor

Montana Fish, Wildlife & Parks Commission
Stan Meyer/Chairman
Dave Simpson/Vice Chairman
Darlyne Dascher
Charles Decker
Dale Tash

Montana Fish, Wildlife & Parks
Patrick Graham/Director
Dave Mott/Administration and Finance

Conservation Education Division
Ron Aasheim/Administrator

Montana Outdoors Staff
Dave Books/Editor
Bev Veneziano/Art Director
Debbie Sternberg/Circulation Manager

For address changes or other subscription information
call **800/678-6668**

Montana Outdoors (ISSN 0027-0016), the official publication of Montana Fish, Wildlife & Parks, is published bimonthly (January, March, May, July, September, and November). Contributions (manuscripts or illustrations) are welcome with the understanding that the department or the editor cannot be responsible for loss or damage. All contributions will be published at the discretion of the editor. Subscription rates are $9 for one year, $16 for two years, and $22 for three years. (Please add $3 per year for Canadian subscriptions. All other foreign subscriptions, air mail only, are $25 for one year.) Individual copies and back issues cost $3.50 each (includes postage). Although ***Montana Outdoors*** is copyrighted, permission to reprint articles is available by writing our office or phoning us at 406/444-2474. All correspondence should be addressed: ***Montana Outdoors***, Montana Fish, Wildlife & Parks, 930 West Custer Ave., P.O. Box 200701; Helena, MT 59620-0701 or e-mail at mtoutdrs@ixi.net.
©Montana Fish, Wildlife & Parks, 1998. All rights reserved.
Indexed by States' Periodical Index, 1660 Smithville Road; Havre, MT 59501.

Postmaster: Send address changes to ***Montana Outdoors***, Montana Fish, Wildlife & Parks, 930 West Custer Ave., P.O. Box 200701; Helena, MT 59620-0701. Preferred periodicals postage paid at Helena, MT 59620, and additional mailing offices.

MONTANA OUTDOORS

March/April 1998
Volume 29, Number 2

Features

2 INCREDIBLE JOURNEYS
by Sam Curtis
Animals rely on a host of built-in navigation systems to get them where they're going and back again.

6 A WILDLIFE VIEWING TOUR GUIDE: MADISON AND GALLATIN RIVERS
by Deborah Richie
This 200-mile highway loop through southwestern Montana provides spectacular wildlife viewing and world-class flyfishing.

12 1997 ANNUAL REPORT
A summary of FWP goals and priorities, project highlights, and a budget breakdown.

17 AND FIVE MAKES A HANDFUL!
by William Phippen
Joe Thornbrugh's rendition of two gadwalls on a prairie pond won first place in this year's state waterfowl stamp competition.

20 MONTANA'S NATIVE RAINBOWS
by Joe E. Huston
Most of Montana's rainbow trout are descendents of fish brought here from other places, but the Kootenai's redband trout are true natives.

24 PERSPECTIVES—THE DAIRY QUEEN BEAR
by Roland Cheek
Could a big male grizzly with a taste for apples and a shy disposition be the bear of the future?

Departments

30 CATCHALL—Becoming an Outdoors Woman Workshop set for July
34 FROM THE FIELD—Roy Hassinger has taught hundreds of kids to fish
35 READERS RESPOND
36 BOOKSHELF
37 CONTRIBUTORS

COVERS—Antelope doe and fawn by Mike Barlow
Bull elk by Kerry Nickou

Incredible JOURNEYS

by Sam Curtis

Will, my 7-year-old, has a favorite movie, an old Disney classic called *The Incredible Journey*, which you've probably seen. It is based on a true story about two dogs and a cat that get separated from their human family hundreds of miles from home. The film chronicles the adventures of the animals' journey back to their family, an odyssey that seems incredible to us because they clearly have the navigational savvy to find their way back to home turf over all those miles.

JOHN LAMBING

SCOTT WHEELER

MICHAEL J. WOLF

Opposite page: *Rainbow trout use their sense of smell to locate home spawning streams, while snow and Ross's geese may navigate by sight and sound as well as sun and stars.* **Left:** *Tiny ladybugs sometimes fly hundreds of miles to seek out hibernation spots.* **Below:** *Elk follow ancient migration routes to winter and summer ranges each spring and fall.*

Fortunately, in Montana, we are witness to countless incredible journeys through the course of every year: the honking chevrons of geese undulating across our autumn skies, the lines of elk winding down from the high country after heavy snows, the first colorful arrivals of songbirds at our feeders in spring, even the beeline of honeybees to their favorite flowers. Incredible feats of animal navigation unfold around us every day of the year here in the northern Rockies and elsewhere.

In their daily search for food, shelter, and places to rest, insects, birds, and animals may move only a few feet or many miles, yet they seem to have a feel for where they are, where they're going and how to get there. An inherent sense of navigation is as much a part of their lives as our ability to find our way to the grocery store, the dry cleaners, and the doctor's office in the course of our daily routines.

However, the most incredible shows of navigational skills are apparent in the annual migrations many animals make to return to traditional feeding and breeding grounds or to escape the cold, snowy winters in Montana and other harsh environments.

Consider the diminutive ladybug, which may fly over 600 miles to reach its favored place for hibernation. Then there are the frost-sensitive monarch butterflies that summer around the Great Lakes where they lay their eggs and then die. The new populations of monarchs that mature to adulthood have never migrated and have no experienced leaders to show the way. Nevertheless, these novice navigators make a 2,500-mile fall flight south to the mountains near Mexico City.

The record distance for mammal migration goes to the gray whale, which forages above the Arctic Circle off the coast of Alaska and migrates to its breeding ground in the ocean near Baja California in Mexico, a distance of over 6,000 miles. Yet, nothing beats the 25,000-mile round-trip navigational phenomenon of Arctic terns that breed during the northern summer near the North Pole then wing halfway around the world to the Antarctic to catch the southern summer. What sun birds. What navigators!

Of course, the implied question lurking in all these wild comings and goings is, "How do they do it?" How do these birds, fish, animals, and insects find their way around so unerringly in this world?

Surprisingly, studies suggest that they navigate just about the same way we do, except they have better built-in equipment for the job: mental maps, memorized landmarks, skymarks and seamarks, keen olfactory and auditory senses, even magnetoreceptors and thermalreceptors.

Perhaps we can most easily understand animal navigation by comparing it to the way we navigate. For instance, the most basic form of human navigation is called piloting. We may not be conscious of practicing it while running our errands around town, let's say, but we have memorized landmarks that indicate when to make turns, where to stop, and how far to go. We turn left at the golden arches, right at the Catholic church, then go straight until we come to the Exxon station. Our favorite

PHIL FARNES

bakery is located directly behind it.

When hiking in unfamiliar woods, piloting becomes a more conscious effort. We take note of a cracked boulder as the place to cross the stream. The tree with the eagle's nest tells us where to head north up the ridge. At the end of the little meadow with the trickling spring, we'll find the start of a game trail that leads us back to camp.

Historically, some of the most proficient human pilots were Australian aborigines who navigated great distances across their continent by use of long traditional songs whose memorized lyrics recited the sequence of specific landmarks and directions needed to reach various destinations.

Researchers have discovered that many birds navigate by a similar sequential order of memorized landmarks including lakes, mountain ranges, river bends, man-made towers, even entire cities. In its migration south through Montana, for example, the Ross's goose uses the sight of the city of Great Falls as a visual cue to turn west across the Rocky Mountains.

Elk, no doubt, use natural visual landmarks to guide them over their annual migrations. And whales are known to use seamarks, like underwater reefs, canyons, and mesas, to find their way through the ocean wilderness.

But what happens when wild navigators cannot see landmarks and seamarks, when the weather socks in, when night falls? This is when animals employ navigational senses that humans may have once possessed but that we may have lost through lack of use over evolutionary time.

Birds, for instance, can hear infrasound—long wavelength sounds inaudible to our ears—created by wind blowing over geographical features like mountain ranges and shorelines. They use these sounds to identify key landmarks even when they can't see them. Sometimes, they are able to detect the signature sound of large landmarks from as far away as 600 miles!

Bats that flit through our evening skies in search of moths emit short bursts of sounds that vibrate with such high frequencies that we cannot hear them. The heard echo of these sounds bouncing off trees and walls and even flying insects allows the bats to navigate through the dark without banging into anything except the dinner they grab while on the wing.

Whales and dolphins use a similar echolocation system to navigate during coastal migration. Research on dolphins outfitted with radio transmitters indicates they follow landmarks they identify by making ultrasonic noises and listening to the way those sounds bounce off coastal landforms. Instances where whales have become beached all seem to happen in places where sandy, gently sloping shores do not bounce back the clear sonar readings produced by a more rugged coastline.

In our own Montana waters, trout display an uncanny ability to sniff out their spawning streams with what we might call an odor-location system. Every stream drainage has a unique combination of minerals, soils, and vegetation types through which its waters flow. Small amounts of these organic and inorganic substances dissolve in the stream and give it a unique aroma. With an ability to smell dissolved substances in concentrations as low as one part per *three quintillion*, trout and salmon let their noses find the landmarks they need to lead them to their home streams.

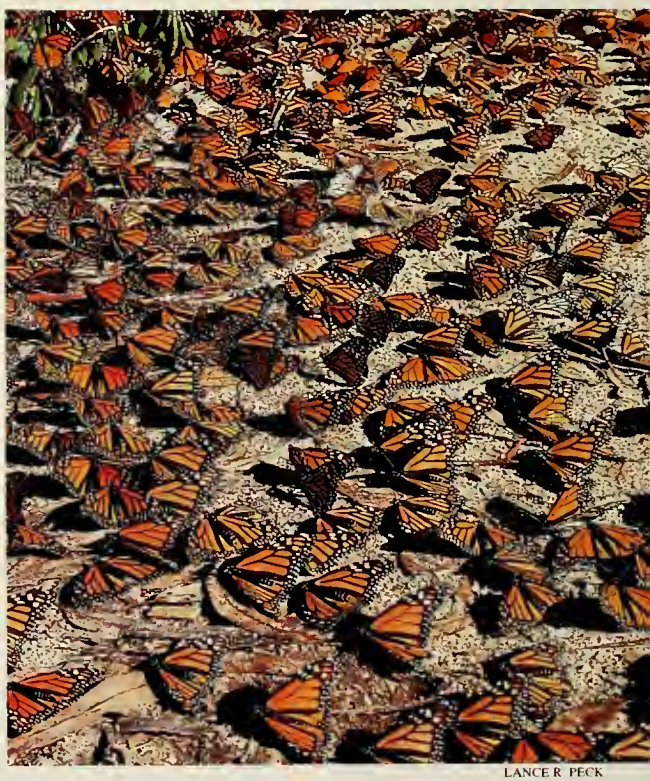
And we think navigating by landmarks is a simple affair!

But navigation gets even more complicated when we try dead reckoning, a technique that can be done without landmarks. The human navigator travels in a known direction for a known distance on each segment of his journey. By noting the sequences of compass bearings and distances for each segment, he always knows where he is in relation to his starting point. He uses a compass to give him direction, a clock and an odometer to measure distance, and a map on which to mark each leg of the journey.

Animals have their own devices for dead reckoning. Researchers have discovered, for example, that the hunting spider, when chased away from prey on which it has been feeding, registers the direction and distance it has moved with the aid of sensory organs located in its leg joints. When allowed to return, the spider can retrace its steps to the exact spot, even after researchers have removed the prey.

We also know that birds have the ability to detect the earth's magnetic field through magnetoreceptors that

RIGHT: *Short-lived monarch butterflies migrate 2,500 miles from the Great Lakes region to wintering grounds in southern Mexico.* **OPPOSITE PAGE:** *Songbirds like the evening grosbeak may orient via the earth's magnetic field, the sun and stars, and visual landmarks.*



LANCE R PECK

may be located in the retinas of their eyes or in their nostrils. The exact location of this built-in compass is still unknown.

Clearly, there are a number of ways animals can get their bearings for navigation by dead reckoning. How they measure distance is more puzzling. We know that some insects can judge wind direction and speed by air pressure on antennae and hairs on their heads. They can also figure into that equation compensation for their own flying speed through visual readings on fixed objects on the ground.

Other insects and birds seem to have a map-like sense of space and an inherent sense of time and speed that allows them to accurately measure distances for navigation by dead reckoning.

DONALD M. JONES

The heavens, of course, have long provided human navigators a clear sense of direction. In the twelfth century, for example, Polynesian canoe travelers were making 4,000-mile round-trip voyages between Hawaii and Tahiti using celestial navigation combined with a mind-boggling array of memorized landmarks, seamarks, and natural clues.

"Traditional navigation is an art for which aptitude and long training, including painstaking practice at sea, are absolutely essential," writes Talbot Waterman in his fascinating book *Animal Navigation*, which provided much of the research for this article. "The facts that must be learned, such as the locations relative to home of perhaps 50 to 100 islands, the times and directions of the rising and setting of the sun plus those of many different stars, impose a heavy load on the would-be pilot's memory. The noninstrumental navigator must be incredibly aware and keen to con every possible clue in nature around him (the waves, the clouds, the sky, the winds, the fish, the birds, and so on) and to combine them with his vast store of remembered lore."

Indeed, early human navigators started learning their essential skills at an early age, much like birds in the Northern Hemisphere learn, while still in their nests, to identify the sky's axis of rotation by Polaris, and birds in the Southern Hemisphere learn to orient to the Southern Cross.

E.G.F. Sauer was the first researcher to show that birds use the stars for navigation. Placing warblers about to migrate in a planetarium with star patterns identical to the real night sky, he found that the birds all faced northwest, the direction they took when migrating. But when he rotated the star patterns by a certain number of degrees, the birds also turned their orientation by the same number of degrees.

During the day, the obvious navigational replacement for the stars is the sun. Many animals seem to use it as a compass, and they have the ability to correct for its constant movement through the sky. German researcher Gustav Kramer demonstrated the ability of starlings to use solar navigation by placing some in an aviary lighted only by the sun. When he used mirrors to change the direction of the sun by 90 degrees, the birds all shifted their position by 90 degrees. But when he simulated a cloudy day, the birds oriented themselves randomly in the aviary, apparently at a loss for direction without other navigational aids to help.

Fortunately, in the world outside the laboratory there are other navigational clues to keep both animals and man on the right course. Both the sea birds and the early canoeists might rely on consistent wind and wave patterns to keep them headed in the right direction. They might identify submerged reef landmarks by changes in the color of the water surrounding them. They might locate solitary island landmarks long before land came into view by the clouds that frequently hang over them.

Animals, like man, have learned that when one navigational aid is not available others must suffice. "Different [navigational] techniques, sometimes in a preferred sequence, are used by the same [animals] under particular circumstances and during various stages of [their] development," writes Talbot Waterman.

Sometimes it seems that the animals have more acute built-in senses for processing all these exterior navigational signs and signals—that we humans are left to rely on charts and maps, sextants and stop watches and, more recently, on satellites and global positioning systems. Sometimes it seems the animals have more incredible, intuitive navigational powers. Or perhaps it's just that we have lost touch with our own animal powers of orientation, that we need only to fine-tune our senses to the pulse of the world around us. That's the suggestion of nature writer John Hay, who ends an essay called "Homing" on this lyrical note: "To be head-taut with the stars around you, foot secure on soil and stone, to know your direction and return through outer signs, is as new as it is ancient. We are still people of the planet, with all its original direction waiting in our being."

Perhaps if we looked to the animals as our teachers and listened carefully to ourselves listening to the world, we could get around without road signs and maps that we've never learned how to fold. ■

A WILDLIFE VIEWING TOUR GUIDE

MADISON AND GALLATIN RIVERS

by Deborah Richie

TO COMPREHEND THE WILD HEART of Montana, there must be open ranges left where the big sky enfolds a herd of elk a thousand strong, wild trout and grayling rise from crystalline rivers, and a pair of sandhill cranes pirouette; where there is elbow room for moose, bald eagles, peregrine falcons, trumpeter swans, bighorn sheep, mountain goats, bison, and grizzly bears. Follow a 200-mile wildlife viewing tour from Bozeman, tracing the Madison and Gallatin rivers, and you will find such a landscape.

The tour features 10 wildlife viewing sites and describes a mid-June trip as an exceptional time for viewing, fair weather (with luck), and wildflowers.

For optimum wildlife viewing, plan on three to four days and return in different seasons to witness migrations, courting, nesting, spawning, and rearing young. For instance, between November and March, immense elk herds gather on their winter range, bighorn sheep mingle close to a roadside, and rough-legged hawks take refuge from the Arctic.

The loop tour falls within the northwest corner of the Greater Yellowstone Ecosystem. Every spoke extending from the 2-million-acre Yellowstone National Park hub is crucial to the strength of this wheel of life. Weaving throughout the 18-million-acre ecosystem are the tracks of grizzly bears—one of two remaining substantial populations in the lower 48 states, and elk—the largest herds in North America. More than 300 bird, 128 butterfly, 94 mammal, and 24 reptile and amphibian species live here all or part of the year.

From Bozeman, take Hwy. 84 west to Norris (38 miles). From Norris, journey south on Hwy. 287 up the Madison River to the junction with Hwy. 191 (79 miles). Follow Grayling Creek and the Gallatin River north along Hwy. 191 back to Bozeman (83 miles).

MADISON RIVER

DALE C. SPARTAS

Madison River

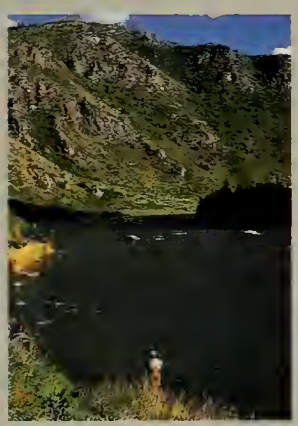
JAN L. WASSINK

River otter

The word "Madison" sparks a dreamy gaze in every angler who remembers an epic day of flyfishing. Yet, as every angler will tell you, there's more to be seen than trout rising. Bald eagles nest all along the Madison corridor. Antelope—part of an intermountain population of about 1,400—race in the valley winds. Coyotes pounce on ground squirrels, while hawks hunt from on high. Otters wrestle on the riverbanks.

It's the birthplace of wild trout management and catch-and-release fishing, starting in the late 1960s. Most recently, whirling disease struck rainbow trout with a vengeance, reducing numbers from 3,000 seven-inchers-plus per mile to 300 by 1995. Brown trout are proving less susceptible.

The international fame of the Madison River fishery may either help save this valley of large cattle ranches or irreparably harm it, depending on people's willingness to forgo fragmenting wildlife habitats with summer homes and to assure healthy streamsides and pure waters.



DALE C. SPARTAS

Beartrap Canyon

PEREGRINATIONS ALONG BEARTRAP CANYON

Tepee rings lie in the shadow of striated cliffs of Precambrian-metamorphic origin that are the nesting fortress of the endangered peregrine falcon. (As far as the exact locations, some magical places are best left off tours.) To experience this lower Madison River, take the unpaved Beartrap Road off Hwy. 84 for 3 miles to the Bureau of Land Management wilderness trailhead. En route, watch for yellow warblers in snowberry and wild rose thickers. Swallowtail butterflies sparkle among the sagebrush. Rough-winged swallows and nighthawks perform aerial acrobatics in a quest for caddisflies. Kingfishers plunge from willow perches. The 7-mile, gentle trail takes you past churning whitewater and possibly basking rattlesnakes that should be left in peace for your safety and theirs. Keep an eye on the juniper-dotted slopes for black bear, fox, coyote, and mule deer.

MADISON-GALLATIN TOUR ROUTE

TOUR LENGTH/TIME:
200 miles, 3-4 days

SEASONAL HIGHLIGHTS:

Spring: great blue herons on rookeries, ground squirrels emerge, grizzlies leave their dens, bison calve in late April, moose calve by mid-May.

Summer: spawning cutthroat and rainbow trout, sandhill crane families feed in wet meadows, golden eagles fledge by late July.

Fall: raptor migration, bugling elk, spawning brook and brown trout, trumpeter and tundra swan migration.

Winter: elk and bighorn sheep on winter range, rough-legged hawks in open valleys, bald eagles along rivers.

OBSERVE WILDLIFE BEHAVING NATURALLY. FEEDING HUMAN FOOD TO WILD ANIMALS CAN HARM THEM AND ENDANGER YOU.

WESTERN BLUEBIRD
BY DONALD M. JONES

BIRDS OF ENNIS LAKE

PHIL FARNES

Ennis—flyfishing mecca

To best see the bird life of Ennis Lake, turn at McAllister, 6.5 miles north of Ennis, and drive the loop around the reservoir. The lake heats up in summer, but browns, rainbows, and grayling survive in deeper channels where the river once flowed. The lake is a rich habitat for white pelicans, great blue herons, western grebes, ospreys, Canada geese, wigeons, and shorebirds like greater yellowlegs and spotted sandpipers. Listen for the primitive calls of sandhill cranes frequenting the marshes on the south end. Along the road in open meadows, both western and eastern kingbirds perch on fence posts, while meadowlarks serenade.

DIANE ENSIGN

Arrowleaf balsamroot

VISTAS ACROSS BEAR CREEK WMA

Arrowleaf balsamroot wildflowers pour down the emerald foothills of the snowy Madison Range like captured sunlight. A northern harrier hovers above the grasslands hunting for voles. The "Helmet" of Sphinx Mountain juts above the 3,500-acre Bear Creek Wildlife Management Area (WMA). In winter, up to 1,400 elk gather to graze and find shelter from wind, snow, and subzero temperatures. Winter viewing is limited to what you can see from the edges of the WMA, closed to public access until May 15. From Cameron, drive 5 miles east on the county road, following the signs to Bear Creek WMA. You can park at the gated roads and hike across the open grasslands in summer and fall.

GEORGE WUERTHNER

Wall Creek WMA

RIVERFRONT LIVING: WALL CREEK WMA

Each winter, some 1,500 elk move freely along the protected west side of the river, the plateau, and the foothills of the Gravelly Range. In summer, western bluebirds, vesper sparrows, prairie falcons, and Swainson's and ferruginous hawks thrive in the rich bunchgrass country. By mid-June, antelope mothers are giving birth and by early July, salmonflies emerge. Don't be surprised if you see cattle on Wall Creek WMA, part of a grazing system designed to benefit both elk and livestock. To get to the 7,000-acre WMA, turn at McAtee Bridge, cross the river, and drive 5 miles. The adjacent West Madison Recreation Area, managed by BLM, also offers river access and camping. The WMA is closed from Dec. 1-May 15, but elk are easily viewed from Hwy. 287.

JOHN MCNEAL

Wade Lake

VEERING WEST TO CLIFF AND WADE LAKES

A side trip to Cliff and Wade lakes (featured in the *Montana Wildlife Viewing Guide*) is worth it just for the 6-mile uphill drive across sagebrush and wildflower-strewn hills where antelope graze, past weathered homesteads framed by the distant Madison Range, and finally dropping into forested, mountain lakes created by geologic faulting. A huge osprey nest in the dead top of a Douglas-fir marks the entrance to Cliff Lake. Hike the 1.25-mile trail between the lakes to hear hermit thrushes and to partake in a Beaverhead National Forest self-guided nature trail section above Wade Lake. Look for bald eagles, waterfowl, beaver, and rainbow trout in both lakes. Wade Lake Resort provides a base for year-round wildlife viewing, featuring cross-country skiing to see river otter, moose, and sometimes trumpeter swans. To get there, take Forest Road 8381, just north of the junction of highways 287 and 87.

GOATS ABOVE QUAKE LAKE

W. STEVE SHERMAN

Quake Lake

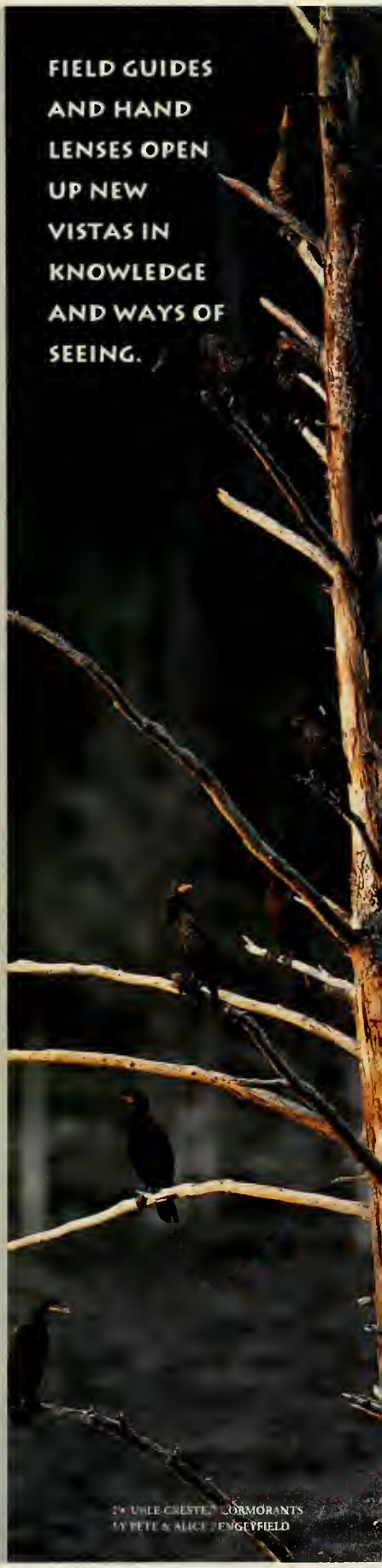
The Gallatin National Forest visitor center at Quake Lake (on Hwy. 287) is an ideal spot to view mountain goats on the cliffs behind it. Use binoculars or a spotting scope to pick out the snowy shapes of these agile climbers. An August 1959 earthquake registering 7.5 on the Richter scale caused 80 million tons of rock to crash into the Madison River at speeds of up to 200 mph, damming the river, killing 28 people, and raising Hebgen Lake 12 feet. Today, ghostly tree snags in Quake Lake serve as both reminder and as perches for double-crested cormorants and ospreys. Below the waters, the trees offer cover for trout.

WILDLIFE CORNUCOPIA: BEAVER CREEK WETLANDS

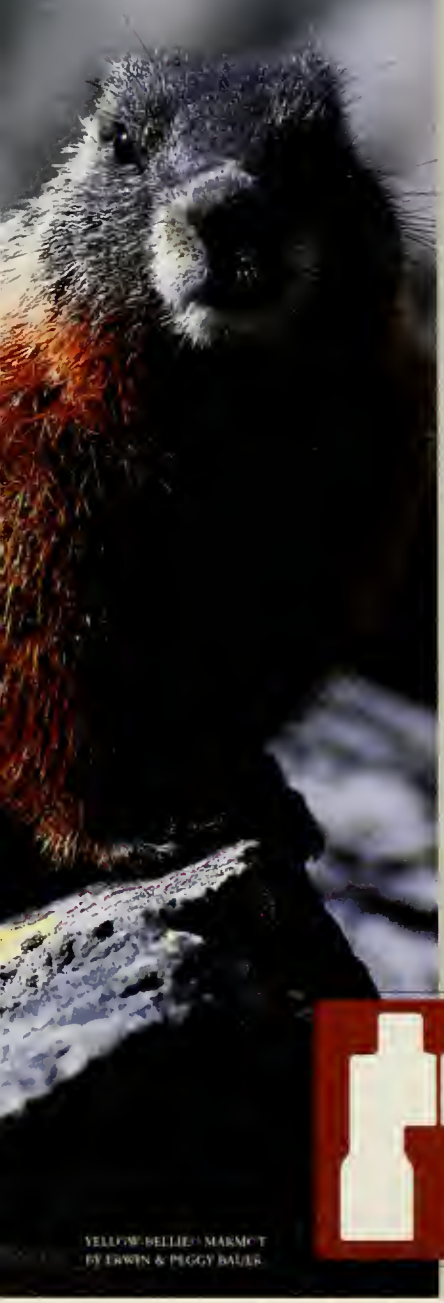
DANIEL D. LAMOREUX

Sandhill crane

Between Quake and Hebgen lakes, the highway intersects a modest marsh surrounded by evergreens and marked by a wildlife viewing binocular sign. Don't pass up a chance to stop, read the interpretive displays and scan. On a June day, you could see a moose wading, a pair of sandhill cranes nesting, cliff and tree swallows darting over the marsh, yellow warblers, beavers, Barrow's goldeneyes, and rising trout.



BINOCULARS AND CAMERAS WITH LONG LENSES SAFELY BRING YOU CLOSE TO WILDLIFE WITHOUT DISTURBING THEM.



YELLOW-BELLIED MARMOT
BY ERWIN & PEGGY BAUER

GALLATIN RIVER

PHIL FARNES

Gallatin River

TOM VETTER

American dipper

A trip down the 40-mile-long Gallatin River Canyon shares no resemblance to the Madison's 50-mile riffle. Where the Madison daydreams through a great cradle of a valley, the Gallatin fumes between the Madison and Gallatin ranges, the keepers of its headwaters. High crags on the Gallatin National Forest are home to peregrine falcons and bighorn sheep, while gentler slopes invite wintering elk and mule deer. Skiers headed to Big Sky Resort often stop to view bighorn sheep from the Spanish Peak herd, close to the roadside at the resort turnoff. Bank anglers fish the riffles, runs, and pools for rainbow trout, and floaters share the whitewater with mergansers and dippers.

Before you reach the canyon, Hwy. 191 follows meandering Grayling Creek through the edge of Yellowstone National Park. The 1988 fires that blackened lodgepole pine forests have opened up possibilities for spotting bears, elk, and moose. Stop at pullouts throughout the park to scan for elk, bison, sandhill cranes, moose, black bears, and black-backed woodpeckers on burned snags. Fire is as natural to the Yellowstone ecosystem as Old Faithful itself.

TAYLOR FORK: ELK FUNNEL AND PIKA PARADISE

PHIL FARNES

Taylor Fork

Just a couple of miles off the highway, Gallatin National Forest campsites along the rushing Taylor Fork prove ideal spots to view yellow-bellied marmots basking on boulders and pikas popping up and disappearing across talus slopes. In June, bluebells, phlox, wild geranium, prairie smoke, and silky phacelia bloom along the grassy and fir-lined streambanks. The campsites all bear cautionary signs that this is prime grizzly country. Taylor Fork is also the migration thoroughfare for Yellowstone elk heading to Bear Creek WMA for the winter. The unpaved road leaves Hwy. 191 on the west side about 6 miles north of the park boundary. After a mile, the road splits briefly to thread one-way through a sheer canyon of andesite mudflows. It continues more than 10 miles, but can become rutted and treacherous after rains.

PATCHING AND PIECING HABITAT: PORCUPINE WMA

JAN L. WASSINK

Bighorn sheep

Three miles south of the turnoff to Big Sky Resort, wildlife viewers can take the road less traveled, cross the Gallatin River, and wander in summer and fall across the open foothills and forest stringers of Porcupine WMA. Like Bear Creek and Wall Creek, Porcupine is closed to access in winter to protect wintering elk. Recently, the Gallatin Land Exchange secured a good chunk of additional habitat in the Porcupine drainage for grizzly bears, moose, and bighorn sheep. FWP provided $1.7 million as a partner in the exchange, centered on the U.S. Forest Service and private timber companies trading land to block up ownership.

JOHN LAMBING

Spanish Peaks

BISON BOULEVARD: SPANISH CREEK

The road to the Spanish Peaks passes through an idyllic, grassy valley. This is Ted Turner's ranch, where bison range as far as the property fences. It's a magnificent chance to see bison up close (from the vehicle only) along a good road that winds 6 miles to a Spanish Peaks trailhead and campground. White-tailed deer wander the creek bottom. Mountain bluebirds perch on fence posts. At the Forest Service campground, look for tree swallows and red-naped sapsuckers nesting in aspen snags. The turn to Spanish Creek is well-marked—after you leave the Gallatin National Forest and before the valley shifts from wild to pastoral.

FOR MORE INFORMATION ON SITES, CAMPING, RECREATION OPPORTUNITIES, GUIDED TOURS:

FWP Wildlife Management Areas: FWP Region 3, 1400 S. 19th, Bozeman, MT 59715. Phone (406) 994-4042.

Beartrap Canyon: BLM Butte District, Box 3388, Butte, MT 59702. Phone (406) 494-5059.

Cliff and Wade Lakes: See site 37 in the *Montana Wildlife Viewing Guide* or call Beaverhead National Forest, Madison RD (406) 682-4253; or Wade Lake Resort (406) 682-7560.

Gallatin National Forest: Box 130, Bozeman, MT 59717. Phone (406) 587-6701.

Ennis Chamber of Commerce: Box 291, Ennis, MT 59729. Phone (406) 682-4388.

West Yellowstone Chamber of Commerce: Box 458, West Yellowstone, MT 59758. Phone (406) 646-7701.

WATCH AT SUNRISE AND SUNSET AND CHECK EDGES OF HABITATS FOR THE BEST VIEWS OF WILDLIFE. LEND WILDLIFE A HELPING HAND BY AVOIDING NESTS AND ANIMALS WITH YOUNG.

WESTERN MEADOWLARK
BY DONALD M. JONES

• Cooperative habitat enhancement efforts paid big dividends for waterfowl during the spring and summer of 1997. The population estimate of 1.9 million breeding ducks in the surveyed portion of Montana, east of the Continental Divide, reflected a nearly 72% increase from 1996 and set an all-time record.

• Two North American Wetland Conservation Act (NAWCA) grant proposals were successfully submitted by FWP, the U.S. Fish and Wildlife Service, and the Bureau of Land Management. Grants totaling $937,000 were received. Approximately $397,770 of the total will be used primarily for projects on private land in two Prairie Pothole Joint Venture areas (PPJV) in northeastern Montana.

• FWP completed a water lease agreement with a water right owner on Mol Heron Creek in the upper Yellowstone River basin to provide instream flows to improve spawning conditions for Yellowstone cutthroat trout in the creek and, ultimately, to increase cutthroat numbers in the Yellowstone River. FWP has obtained nine water leases through voluntary agreements with water right owners under the water leasing statute approved by the 1989 Legislature.

• Bull trout recovery efforts continued throughout 1997. A draft restoration plan being developed by an interdisciplinary group appointed by Governor Racicot is nearly finished. Local watershed groups and management agencies have been implementing habitat restoration efforts throughout northwestern Montana, and management continues to emphasize bull trout and native fish restoration. A decision on whether bull trout will be listed as threatened under the Endangered Species Act will be made by the U.S. Fish and Wildlife Service as early as June 1998.

• Forty-five fisheries habitat improvement projects were approved for funding through Montana's Future Fisheries Improvement Program in 1997. These projects included over $2 million in habitat improvements at a cost of $685,600 in license dollars, the rest in matching funds. Projects funded through the program will enhance spawning and rearing habitats, improve riparian vegetation and bank cover, reduce loss of fish into irrigation diversions, enhance stream flows, and restore fish passage.

• FWP fisheries personnel in eastern Montana, along with 50 volunteers, collected a record 132 million eggs from spawning walleyes this spring at Fort Peck Reservoir. More than 1.2 million fingerlings and 52 million fry were returned to the reservoir. Twenty other waters received these walleyes.

• Conservation easements continue to be FWP's principal tool for protecting valuable wildlife habitat through the Habitat Montana program. In 1997, conservation easements were used to protect wildlife habitat on 33,583 acres of land, including 10,829 on the Hirschy property near Wisdom, 6,045 acres on the Bauxbaum property at Glendive, 8,908 acres on the Hirsch property near Anaconda, 5,359 acres of the Bolin and Lewis properties near Hamilton, 1,554 acres of the Gillies property neat Missoula, and 888 acres on the Reinoehl property at Clearwater Junction. Over the last four years, the wildlife values of over 150,000 acres have been protected by conservation easements.

• In 1997, FWP entered into a cooperative agreement with the Fort Belknap Community Council to release captive-raised black-footed ferrets in

In striving to reach our goals we are...

Managing *with a focus*

KERRY NICKOU

CONRAD ROWE

1997 ANNUAL REPORT

prairie dog towns on the Fort Belknap Indian Reservation. There were three releases totaling 23 kits. The second release on September 24 was witnessed by 100 area school children. Innovations related to the releases included daylight releases and assisted dispersal by releasing just a few on each prairie dog town. Spotlight surveys to monitor ferret movements are continuing.

• Habitat restoration efforts in the Blackfoot River drainage, primarily for bull trout and westslope cutthroat trout, continued to gain national attention based on accomplishments to date and the landowner-FWP alliances that are being built for the benefit of fish and wildlife. These efforts have now restored habitat in 23 streams and affected more than 200 miles of stream and wetland habitat.

CONRAD ROWE

• FWP hired a TIP-Mont (Crimestoppers) program coordinator and increased program publicity, encouraging the public to report wildlife violations. In 1996, the latest year for which complete information is available, 666 reports of violations led to the imposition of $52,295 in fines, $13,700 in restitution, and $5,950 in rewards to persons reporting crimes. The violators' hunting, fishing, and trapping privileges were suspended for a total of 98 years, with one lifetime suspension. TIP-Mont has now been expanded to include state park violations.

DEER MANAGEMENT UPDATE 1997

Hunting regulations become more restrictive

The past winter's heavy snows came early, stayed late, and were the worst on record in many areas of Montana. Northwestern, southwestern, and northeastern portions of the state were especially hard hit. Survival of fawns was low in those areas.

Deer hunting regulations in 1997 were more restrictive than in recent years in response to declines in both mule deer and white-tailed deer in certain parts of Montana. While the restrictions primarily affected mule deer hunting, regulations for hunting white-tailed deer in some areas also were more conservative with the goal of reducing overall harvests.

In an effort to reduce the mule deer buck harvest and to address the particularly pressing concern for improved buck/doe ratios in southwestern Montana, the FWP Commission adopted a requirement that ALL hunters who purchase a Deer A license have it validated for a specific area of the state.

The goal of these changes was to significantly decrease overall harvest of deer so that populations can increase when environmental conditions promote better fawn survival. Initial indications from 1997 harvest data indicate that, due to a combination of factors, including low deer numbers and mild weather during most of the 1997 season, deer harvests were down considerably in most of southwestern and northwestern Montana.

FWP is now in the process of setting new objectives that will guide management of Montana's deer in the future.

WHIRLING DISEASE UPDATE 1997

Research Hits High Gear

Montanans' spirits were buoyed in 1997 by the discovery that Arctic grayling and bull trout are resistant to whirling disease. The research team further established that Yellowstone and westslope cutthroat trout are prone to infection, yet are slightly less susceptible than rainbow trout to contracting a fatal dose of whirling disease.

DUSAN SMETANA

These continuing discoveries—in conjunction with extensive research being conducted on Montana's wild trout waters and in Montana laboratories—are helping FWP fisheries managers to recognize a broad spectrum of whirling disease vulnerability that includes how, when, and where wild trout and the parasite interact. FWP's ultimate hope is to develop a way to naturally segregate young wild trout—perhaps in natal tributaries—from the whirling disease parasite when the parasite is most abundant and active.

As 1997 drew to a close, almost 60 bodies of water—about 20% of all sample sites—have been found to be holding wild fish with varying degrees of whirling disease infection. None of Montana's state, federal, or private hatcheries is infected with whirling disease. Major waterways that are still believed to be whirling-disease free include: the Bighorn; Stillwater; Boulder (of the Yellowstone); Gallatin; East Gallatin; Missouri below Cascade, and the stretch from Headwaters to Canyon Ferry Reservoir; Teton; Bitterroot; Flathead; Kootenai; Marias; Big Spring Creek; and the Madison River above Quake Lake.

...working to keep our State Parks sound

FLATHEAD LAKE STATE PARK BY BARBARA THOMAS

• Forty acres adjacent to Lake Mary Ronan State Park were acquired from Plum Creek Timber Co. in 1997. This will help provide expanded access to this popular fishing lake.

• Crews completed phase 1 of construction at Big Arm State Park, including development of a safer highway entrance to the park; a new boat ramp, boat dock, and parking area; a complete park boundary survey; new showers accessible for people with disabilities; and nature and horse trails.

• At Flathead Lake State Park, FWP worked in partnership with local communities to install playground equipment, establish nature trails, and construct a group picnic shelter at the Wayfarers/Harry Horn unit.

• The River's Edge Trail through Giant Springs State Park was expanded and the Rainbow Falls overlook was completely rebuilt. Work continues on the federal Lewis and Clark Interpretive Center, which will occupy a site inside the park.

• FWP and the Billings-based Western Heritage Center received a $30,000 Museum Leadership Grant from the Institute for Museum and Library Services to develop a computer web site for an electronic field trip to Pictograph Cave and Chief Plenty-Coups state parks.

• FWP, in partnership with Garfield County and the U.S. Army Corps of Engineers, reconstructed the last four miles of county road leading to Hell Creek State Park. This project will ensure all-weather access to this popular state park and the surrounding C.M. Russell National Wildlife Refuge in this rugged, remote area of eastern Montana.

• 1997 marked the seventh year of the Parks Division's statewide volunteer program and each year the numbers soar to new heights! In 1997, volunteers donated over 41,422 hours of time, compared with 35,460 hours in 1996, to assist with services at state parks.

• 1997 was another banner year for the internship program in state parks. Thirty interns worked a total of 12,413 hours.

...stressing the importance of Public education

• FWP provided copies of *WILD OUTDOOR WORLD* youth magazine, published in cooperation with the Rocky Mountain Elk Foundation, to all fourth graders in Montana public schools.

• FWP's two mobile DART (simulated hunting situation) Shooting Centers were used extensively throughout the state to reach thousands of Montanans with an enjoyable shooting experience. Participants were instructed in firearms and archery safety, proper shot placement, and hunter ethics as they took part in this fun, yet educational, activity.

LARRY JAVORSKY

• FWP, in cooperation with the Boone & Crockett Club and representatives from Montana Agriculture in the Classroom, developed a teacher's guide for use with FWP's video documentary, LANDSCAPE, focusing on grasslands and grazing themes.

• Game wardens have been active throughout the year in speaking to sporting groups, hunter education instructors, Boy's State delegates, and the public regarding hunter behavior. FWP has initiated a statewide focus group to address hunter behavior problems.

• FWP's Family Fishing Adventures Program expanded in 1997 to include 40 Montana schools in the nationally acclaimed Hooked on Fishing, Not on Drugs program; fishing tackle loaner sites were established in each Hooked on Fishing, Not on Drugs community to provide free loan of fishing equipment to children and their families; newly trained volunteer fishing instructors and other educators conducted over 200 aquatic education courses and fishing clinics, reaching nearly 9,000 participants of all ages; youngsters visited Montana's first urban fishing site in Miles City more than 1,000 times.

• FWP, through its Shooting Range Enhancement Program, granted $119,300 to seven Montana towns to improve local shooting opportunities.

Montana Fish, Wildlife & Parks

MISSION—

Montana Fish, Wildlife & Parks, through its employees and citizen commission, provides for the stewardship of the fish, wildlife, parks, and recreational resources of Montana, while contributing to the quality of life for present and future generations.

DEPARTMENT GOALS—

• Manage with a focus on ecological systems to reflect the diversity of all wildlife and their habitats, while maintaining our commitment to Montana's hunting and fishing heritage.

• Provide increased opportunities for public enjoyment of fish, wildlife, and parks resources, while maintaining our commitment to improve landowner-sportsperson-department relations.

• Achieve a quality, financially sound state parks system.

• Elevate the importance of public education and participation in all program areas to afford citizens the opportunity to better understand, appreciate, and make informed decisions about our natural and cultural resources.

• Create a work environment where a diverse workforce can focus on FWP priorities under healthy, satisfying, and caring conditions.

MONTANA FISH, WILDLIFE & PARKS
COMMISSION—

STAN MEYER, *Chairman*, Great Falls

DAVID W. SIMPSON, *Vice Chairman*, Hardin

DARLYNE DASCHER, Fort Peck

CHARLES R. DECKER, Libby

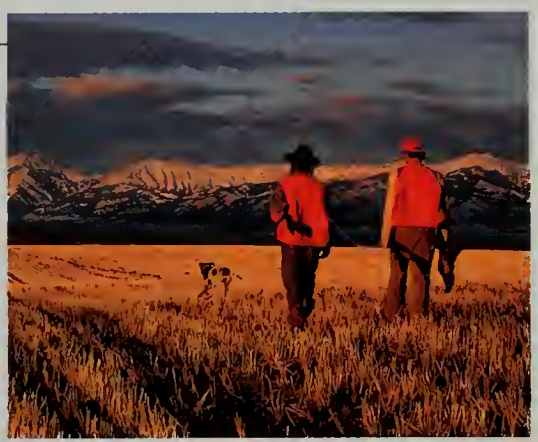
DALE TASH, Dillon

Visit our web site at fwp.state.mt.us

• FWP's Region One Citizen Advisory Committee has helped FWP become more connected to the people it serves. The 11 peer-selected members of the committee meet regularly with FWP staff and provide advice on issues that affect constituents. In turn, these advisors report back to the public on ways to create better information exchange.

• A citizen committee charged with recommending measures to improve black bear hunting regulations in northwestern Montana has made recommendations designed to reduce the number of young female black bears harvested and the number of bears harvested illegally. FWP will consider these recommendations during the upcoming 1998/99 season-setting process.

...providing increased Opportunities



DUSAN SMETANA

• A formalized public fishing access plan on the lower Ruby River was implemented. This community-grown solution culminated years of work to provide angling access on this southwestern Montana stream. The access sites were prepared for opening with parking areas, signs, and fencing, and a caretaker was hired to maintain the sites, work with area landowners, collect use data, and assist with weekly reports.

DONNA CAMPBELL

• A fishing pond designated "just for kids" is in the initial stages of development at Havre. Growing enthusiasm related to angling in the area is likely the result of FWP employees spending increased time with five Havre elementary school classes as part of FWP's increasingly popular Hooked on Fishing, Not on Drugs program.

• Over 100 biologists, game wardens, and conservation specialists joined in implementing a continuing expansion of hunting access to private land. The Block Management Program grew from 883 individual areas encompassing approximately 7 million acres in 1996 to 942 areas encompassing over 7.5 million acres in 1997.

• FWP's fourth annual "Becoming an Outdoors Woman" workshop was held at Beaver Creek Park south of Havre last summer. Fifty participants from north-central Montana and beyond attended the workshop.

where the money comes from

budgeted, fiscal year *REVENUES* 1998

•FWP IS FUNDED PRIMARILY BY USER FEES.
•LESS THAN 1% OF FWP'S TOTAL BUDGET COMES FROM THE STATE GENERAL FUND.

HUNTING AND FISHING LICENSES

This includes all license sales revenue, interest earnings, and other miscellaneous revenue. *Non-resident sales account for nearly two-thirds of FWP's total license revenue.*

69.3 %
$35,367,043

FEDERAL REVENUES

FWP receives federal monies to: aid in fish and wildlife restoration efforts; for parks development and maintenance; for boating safety, education, and regulation; and other programs. In FY98 nearly 90% of FWP's federal assistance, or approximately $10 million, was apportioned to Montana for fish and wildlife restoration through the Pittman-Robertson (P-R) and Wallop-Breaux (W-B) programs. P-R monies are derived from an excise tax on sporting arms and ammunition, hand guns, and certain archery equipment. W-B monies are derived from an excise tax on fishing equipment and electric trolling motors, a portion of the federal fuels tax, and import duties on fishing tackle and pleasure boats. The balance of the federal monies comes from various federal sources and is used for other purposes, including parks projects.

19.2 %
$9,775,847

OTHER STATE REVENUES

Other state revenue sources include: fees for state park use; a portion of the state's lodging facilities use tax; a small percentage of the state fuel tax; interest earnings from coal severance tax receipts; and other miscellaneous revenue sources.

10.7 %
$5,472,941

GENERAL FUND

State tax dollars.

0.8 %
$416,574

TOTAL REVENUES: $51,032,405

where the money goes

budgeted, fiscal year *EXPENDITURES* 1998

FWP SPENDS ITS MONEY TWO WAYS:
• OPERATIONS for day-to-day management of fish, wildlife, and parks resources.
• CAPITAL for major repair and maintenance of FWP properties, for renovation and construction of facilities, and to protect and enhance critical habitats.

parks:

operating	$4,947,401
capital	$1,803,750
total	$6,751,151
% of total	13.2

The Parks Division is responsible for development, maintenance, and operation of all state parks and affiliated sites with an objective of providing diverse recreational opportunities while preserving important historical and cultural resources within Montana.

wildlife:

operating	$6,918,267
capital	$3,810,000
total	$10,728,267
% of total	21.0

The Wildlife Division is responsible for managing all species of big game, upland game birds, waterfowl, furbearers, non-game birds, and endangered wildlife in the state.

fisheries:

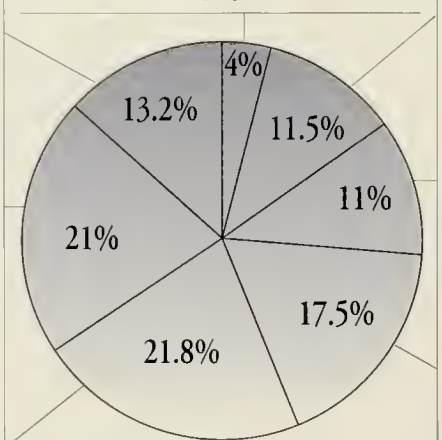
operating	$6,434,365
capital	$4,708,309
total	$11,142,674
% of total	21.8

The Fisheries Division is responsible for the management and perpetuation of Montana's fish and other aquatic resources.

conservation education:

operating	$2,015,280
% of total	4.0

The Conservation Education Division acts as a clearinghouse for disseminating information on FWP activities and news items to the media and conducts a variety of educational and recreation-safety programs.



FWP total:

operating	$40,366,846
capital	$10,665,559
total	$51,032,405

enforcement:

operating	$5,884,236
% of total	11.5

The Enforcement Division is responsible for enforcing all the fish and game laws of Montana, FWP rules, and FWP Commission regulations. Division personnel also enforce state boating and snowmobile rules and state park regulations, as well as private property laws and regulations as they pertain to hunting and fishing.

field services:

operating	$5,554,961
% of total	11.0

The Field Services Division is responsible for FWP's lands program and construction projects, as well as its Block Management (public hunting access) and landowner-sportsperson's relations programs.

management & finance:

operating	$8,612,337
capital	$ 343,500
total	$8,955,837
% of total	17.5

The Helena-based director's office staff makes major policy and administrative decisions. Regional supervisors handle on-the-ground implementation of policies and programs. The Administration and Finance Division is responsible for accounting, purchasing, personnel, data processing, and administration of FWP's licensing functions.

And Five Makes a Handful!

Thornbrugh wins 1998 Montana Migratory Bird Stamp contest

by William Phippen

first place
JOE THORNBRUGH

Naturalist and artist Joe Thornbrugh of Victor has won Montana's state migratory bird stamp contest for the fifth time. So it seems quite fair if we, his fellow Montanans, proudly contend that perhaps only a handful of artists—anywhere—possess such talents for accurately rendering waterfowl with a pen or brush. Thornbrugh also won the stamp's inaugural competition in 1986, as well as the 1990, 1991, and 1997 competitions.

Based on the decision of a panel of six judges in Helena late last fall, his painting of a pair of gadwalls in a prairie pothole setting will be reproduced as Montana's 1998 Migratory Bird Stamp. Jim Borgreen, Lewistown, Zee Huang of Hamilton, and Bob Kercher of Great Falls, placed second, third, and fourth, respectively.

second place
JIM BORGREEN

The 1985 Legislature authorized Montana Fish, Wildlife & Parks to produce and sell the migratory bird stamp. Waterfowl hunters are required to purchase the $5 stamp, and proceeds from the sale of stamps and related artwork each year are used to fund waterfowl habitat improvement projects and develop and enhance wetlands for the long-term benefit of waterfowl in Montana. Since 1986, over $1.6 million has been raised for waterfowl projects across the state.

Thornbrugh's paintings reflect the painstaking research he undertakes on his subjects before he ever touches a brush to canvas. His paintings also reflect his life-long interest in wildlife, particularly waterfowl and other birds, his favorite artistic subjects.

Thornbrugh, who acquired an interest in nature and art during his childhood years in western Montana, has observed, sketched, and painted the plants and animals of Montana since his early teens. Since undertaking painting full-time in 1975, his works have gained widespread recognition and earned numerous awards. His art has been exhibited at the Los Angeles County Museum of Natural History, the headquarters of the National Wildlife Federation in Virginia, the Museum of Native American Cultures in Spokane, the Charles and Emma Frye Art Museum in Seattle, the Leigh Yawkey Woodson Art Museum in Wisconsin, the Cleveland Museum of Natural History, and the Smithsonian Institution's National Collection of Fine Arts in Washington, D.C. His paintings have also earned a special showing at the Montana Governor's Mansion in Helena.

Besides his continuing contributions to Montana's migratory bird stamp program, Thornbrugh also illustrated FWP's very colorful and detailed identification guides to "Montana's Birds of Prey" (1987) and "Montana's Owls" (1990), which appeared in *Montana Outdoors* magazine. In addition, in 1991 Thornbrugh completed his first series of collector plates entitled "Baby Owls of North America" for the Bradford Exchange, and he has since completed four additional series. And in 1997, he won the Kansas Wildlife Art Series sponsored by the State of Kansas.

third place
ZEE HUANG

Says Thornbrugh of his latest success in Montana's migratory bird stamp competition: "In the years since I designed Montana's first stamp, I've seen dramatic increases in the number of ducks and geese here in Montana. For those of us who hunt waterfowl and enjoy wildlife viewing, these are exciting times."

Thornbrugh notes that he makes several trips to Montana's "Hi-Line" each year to hunt waterfowl and upland birds, and every year he sees "more and more" waterfowl on the region's numerous waterfowl management and waterfowl production areas.

"As an artist, it's gratifying to know that [Montana migratory bird] stamp dollars have contributed to the development and enhancement of these areas. I felt it only fitting that my 1998 design would depict one of these areas."

Echoing the sentiments of all those hunters who have been fortunate enough to enjoy hunting waterfowl in northeastern Montana's wide-open prairie pothole region, Thornbrugh relishes his next opportunity to visit that rich tapestry of water and whistling wings.

"Even now," he exclaims, "I'm looking forward to my next trip and the first morning flights of ducks and geese in the beautiful eastern Montana sky." ■

fourth place
BOB KERCHER

Montana's NATIVE RAINBOWS

by Joe E. Huston

GRANT GRISAK

DAVE BOOKS

Although the only sure way to distinguish redband trout from coastal rainbow trout is through genetic analysis, the redband (top photo) usually has a darker background color and larger spots than the coastal rainbow (lower photo). Redbands also have red-orange hues on the body and sometimes persistent parr marks (dark vertical blotches on the sides).

Knowledgeable anglers have long known that brown trout and brook trout, now widely distributed in Montana, are the result of hatchery transplants, and that cutthroat and bull trout are true Montana natives. But how about Montana's most abundant trout, the rainbow?

For years it was assumed that Montana's rainbows were the offspring of fish introduced through stocking programs many years ago and, in fact, nearly all of them are. But rainbow trout are native to Idaho, and Elmer Phillips, foreman of the Libby State Fish Hatchery in the 1930s and State Superintendent of Fisheries from 1940 to 1944, maintained that rainbow were native to the lower Kootenai River drainage in northwestern Montana.

His belief was confirmed by a study initiated in 1977 by two students from Carroll College in Helena. The students, Darryl Espeland and Dean Scow, had the good fortune to be assisted by Dr. Fred Allendorf and Steve Phelps, geneticists at the University of Montana, and Montana Fish, Wildlife & Parks fisheries biologists. When rainbows collected from Callahan and South Callahan creeks and from Yaak River downstream from Yaak Falls were genetically tested at the University of Montana, the fish from Callahan and South Callahan proved to be redband rainbow trout (comparable to the native rainbow in Idaho), while fish from Yaak River were hybrids of redband and rainbow trout of fish hatchery ancestry.

Thus, it was concluded that rainbow trout are native to the Kootenai River drainage in Montana downstream from a "barrier" falls near the Montana-Idaho border. Fisheries biologists believed the falls involved was

Yaak River by Donald M. Jones

Kootenai Falls between Libby and Troy (see map). More recent genetic studies have shown a somewhat different distribution of native rainbows in northwestern Montana—more about that later.

Just what are redband rainbow trout? Present-day classification divides rainbow trout into two major groups, coastal rainbow trout and redband rainbow trout. Coastal rainbow trout are native to streams and lakes on the western slopes of the Cascade Mountains in Washington, Oregon, and California. The vast majority of Montana's rainbow trout are descendants of the coastal rainbow, extensively raised in fish hatcheries and planted in Montana's streams and lakes beginning in about 1910. Today, hatcheries in Montana raise rainbow trout primarily for stocking in lakes and reservoirs, while most stream and river rainbows are wild descendants of fish planted many years ago.

Redband rainbow trout, on the other hand, which include steelhead, Kamloops rainbow, and inland or interior rainbow, occur in streams and lakes in the Columbia River drainage east of the Cascade Divide, extending eastward through Idaho to the Kootenai River drainage of northwestern Montana.

The redband is similar in appearance to the coastal rainbow trout, but has larger spots and usually a darker background color. Adult redbands also have a faint pink "cutthroat" slash on each side under the jaw, red-orange hues on the body, and sometimes persistent parr marks (parr marks are dark vertical blotches on the sides of young trout). However, distinguishing a coastal rainbow from a redband trout or a hybrid is not possible using these characteristics alone. Starch gel electrophoresis, a genetic process that involves encoding 45 proteins from muscle, liver, and eyeball tissue, is the state-of-the-art method.

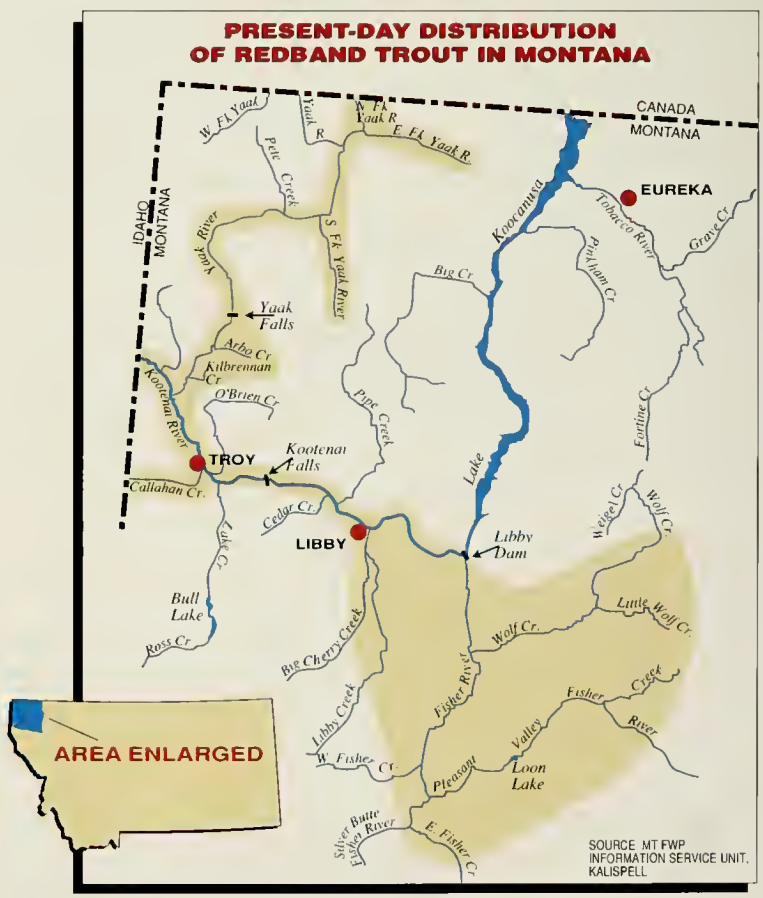
To better understand the distribution of redband trout in northwestern Montana, one needs to understand how trout arrived in Montana in the first place. About a million years ago, ancestral cutthroat trout ascended from the Pacific Ocean up the Columbia River drainage into western Montana. Over the years, they evolved into the present-day westslope cutthroat of western Montana and the Missouri River drainage, the Yellowstone cutthroat in the Yellowstone River drainage, and numerous other cutthroat trout subspecies in Wyoming, Idaho, Utah, Colorado, and New Mexico.

Much later, about 40,000 to 70,000 years ago, geologic events created barrier falls in the Clark Fork-Pend Oreille River and Kootenai River that stopped further invasion of fish from downstream areas. The barrier falls in the Clark Fork-Pend Oreille River drainage is located near the Idaho-Washington border downstream from Lake Pend Oreille, Idaho. Until recently, the barrier falls in the Kootenai River was thought to be Kootenai Falls.

Some time after the barrier falls were created, redband trout invaded the upper Columbia River drainage, eventually reaching the barrier falls. Above the barriers, the cutthroat was the only true trout (bull trout, brook trout, and lake trout are technically chars). Below them, the redband often replaced the cutthroat.

But widespread stocking of coastal rainbows and other trout species throughout the twentieth century has greatly reduced the redband trout in Montana. Only a few remnant populations remain and these are at risk of extinction. Therefore, this subspecies has been designated a Montana "fish of special concern."

Much of the redband's habitat in Montana is on land managed by the U.S. Forest Service and corporate timber companies. The Forest Service has been a major cooperator with FWP in studies to determine where there are remnant populations and to promote the fish's recovery. The U.S. Fish and Wildlife Service has assisted with funding. The studies include electrophoresis at the University of Montana's Wild Trout and Salmon Genetics Laboratory to determine the species and genetic purity of the black-spotted trout (coastal rainbow, redband, and cutthroat trout).



CHUCK HANEY

Scientists believe formation of a "barrier falls" in the Kootenai River some 40,000 to 70,000 years ago halted further upstream invasion of redband trout. Once assumed to be Kootenai Falls between Libby and Troy (above), the barrier falls is now believed to have existed farther upstream near the mouth of Fisher River, perhaps at the site of present-day Libby Dam.

Based on genetic analyses of fish from 49 sites in the Kootenai River drainage, it is believed that both redband trout and westslope cutthroat trout are native downstream from Libby Dam, and that westslope cutthroat trout, but not redband, are native upstream from the dam. These data indicate that the barrier falls in the Kootenai River was not at Kootenai Falls, as previously thought, but existed in geologic time near the mouth of Fisher River, perhaps at the site of present-day Libby Dam.

Genetic mapping also indicates that redband trout are native to many low-gradient streams throughout the Kootenai River drainage downstream from Libby Dam, while westslope cutthroat are native to higher gradient mountain streams.

In the Yaak River system, the data show that redband trout are native downstream from Yaak Falls. Upstream from the falls, both redband and westslope cutthroat are native. Historically, redbands were most likely limited to the mainstem Yaak River, the East and North forks, and the valley portions of other tributary streams. In some instances, the redband and the westslope cutthroat appear to have existed together in a "sympatric" situation (i.e., residing in the same stream but not hybridizing).

The overall picture is further complicated by the discovery of essentially pure redband trout in several waters outside the Kootenai River system. Letters dated 1913 in state fish hatchery files provide a plausible explanation. They indicate Somers State Fish Hatchery personnel may have collected redband trout eggs from Kilbrennen Lake near Troy (where the redband was native), and reared and distributed the fish. If so, some redband populations thought to be aboriginal may be of hatchery origin.

Obviously, because of the current distribution of coastal rainbow and other trout species, the redband trout cannot be restored to its original range. But at a minimum its habitat should be protected and there should be no fish stocking that could potentially affect it. It is important that northwestern Montana's native rainbow has a secure and permanent home in its ancestral waters. And from a practical standpoint, the redband has the potential of providing a fishery where domesticated hatchery rainbows do poorly. ■

The Dairy Queen Bear

by ROLAND CHEEK

Editor's Note—The following account of an unusual grizzly bear and the role of the South Fork Grizzly Study in bear management is excerpted from Roland Cheek's award-winning book, Learning to Talk Bear. *Says Cheek, "I began extended research where I felt it would most count—by researching the researchers. And of all bear research, none in the Rockies matched that spilling from Montana Fish, Wildlife & Parks' South Fork Grizzly Study...."*

Learning to Talk Bear *is available for $19.95 from Skyline Publishing Co., P.O. Box 1118, Columbia Falls, MT 59912; (406) 892-5560.*

They call him the "Dairy Queen Bear." A charismatic name is appropriate for a charismatic bear.

He was assigned Number 22 by trappers who first snared him in the South Fork Grizzly Study. But even those professionals immediately referred to him by a descriptive nickname rather than an impersonal number. They called him "Digger."

Only the ears protruded above the trench as biologists Tim Thier and John Waller approached the snare they'd set the previous day. As grizzlies go, nervous digging when trapped isn't unusual. But this bear's pit was larger and deeper than most. And unlike other bears, except for the hole, this one hadn't thrashed about or savaged his immediate surroundings. In fact, Number 22 proved remarkably docile.

He was trapped and radio-collared at age three in what biologists refer to as the "core" of the Grizzly Project's study area, the northern Swan Range from near Columbia Falls south to the Bob Marshall Wilderness boundary. From the beginning, Number 22 stretched parameters of recognized grizzly behavior.

"Grizzly Impact" © 1993 John Seerey-Lester. Artwork courtesy of the artist and Mill Pond Press, Venice, FL 34292-3505.

"Trailblazer—Grizzly Bear" © 1995 Carl Brenders. Artwork courtesy of the artist and Mill Pond Press, Venice, FL 34292-3505.

He acquired yet another alias when kids at the Swan Valley Elementary School, participating in the Adopt-A-Grizzly program of the *Brown Bear Resources*, "adopted" the young male and gave him the name "James." Tranquilized, measured, weighed, aged, and radio-collared, Number 22 was released and monitored thereafter. First captured in mid-June, 1989, the young bear wandered for a couple of weeks in the mountains west of Hungry Horse Reservoir, then swam the mile-wide lake and clambered over the Flathead Range, dropping to the Flathead's Middle Fork near Spruce Park. Only a day or two later, he'd found the corn spill along U.S. Highway 2, near Marias Pass.

Climb mountains, swim lakes, all to discover delicacies attracting gaggles of grizzlies, but that he could in no way have known about. How could a young bear, only a season after being evicted by his mother, find his way over 30 miles and two mountain ranges to fermented grain spilled years before in a railway derailment?

"If you find the answer to that question," said Montana Fish, Wildlife & Parks research specialist Tim Manley, "let us know, will you?"

Even more amazing is the fact that during subsequent seasons, Number 22 never again visited the fermented corn. An alcoholic, Digger is not.

That first year after being trapped, home was where the bear's heart was. First he was attracted to huckleberries along Twin Creek, then, in late November, to an elk carcass in a Logan Creek clearcut. There he stayed. And stayed. As late as December 13, when other bears were already long-denned, Number 22 was still active. When Manley last flew over the area three days later, Digger had finally gone to bed.

Mid-December seems late for any grizzly to be out and about. I asked researchers if Number 22 delayed his denning in subsequent years and was told that in 1990 and '91 he entered hibernation by early November—typical bear behavior in northwestern Montana. The following year, however, Digger's biological clock again stuck when he became enamored by the glitz of Bigfork.

Bigfork is a quaint unincorporated village of around a thousand people located where Swan River spills into Flathead Lake. With its superb location—ready lake access and surrounded by stunning river and mountain backdrops—the community has developed into a retirement center and is becoming the cultural center for Flathead Valley.

There's considerable support amongst Bigfork's business community to maintain the village atmosphere, though occasional national franchise operations succeed in establishing a foothold—like Subway Sandwiches and Dairy Queen.

Though Number 22 was leading a reclusive, more or less typical male grizzly existence, replete with wanderlust and few time cards to punch throughout ages four and five, he still managed to put his own spin on bear behavior—like returning to the same den for hibernation. Research indicates that *Ursus arctos horribilis* never uses the same den twice. But the one Digger dug in 1990 apparently was so comfortable he re-booked for a second Swan Range hibernation visit in 1991.

It was in 1991 that Digger first ventured over the western mountains into Flathead Valley. His sojourn was brief—a few days in late April while grazing the greening skunk cabbage and digging the bulbs of spring beauties and glacier lilies in the bottomlands that abut the Swan Range. Then it was back to his home range on the west side of Hungry Horse Reservoir as his biological clock ticked off the days until mating season.

Number 22 emerged from his twice-used den on March 13, 1992. By March 26, he'd floundered across the Swan's deep snows to feed again in the greening Flathead Valley, but returned again to his home range by mid-May. Research trapper Tim Manley, hiking in Wheeler Creek on May 13, had a face-to-face encounter with him at a mere 30 yards.

"He's very shy around humans," Manley said. "As soon as he became aware I was there, he wheeled and crashed away."

In early September, wanderlust (and perhaps hunger, since huckleberries failed because of a high-country drought in 1992) drove Number 22 once again to the Flathead Valley. This time he roamed out across the Swan River near the mouth of Swan Lake, entering settled country. By September 21, Digger had moved into urban Montana, zeroing in on apple trees along the west side of the Swan Hills, just outside of Bigfork. The next evening, the bear was radio-tracked to within 200 yards of the Bigfork Dairy Queen, prompting his latest nick-name.

He hung around for a week, then crossed the river to work along Flathead Lake as far south as Yellow Bay. He was back to his Swan Hills apples by mid-October, and there he stayed. And stayed. Few settlement residents were aware the shy nocturnal bear was around, but Montana Fish, Wildlife & Parks (FWP) people sweated, knowing a grizzly roamed close to quantities of people. Among those who knew a grizzly was in the neighborhood, opinion was mixed.

The first reaction upon learning a giant grizzly roamed the byways of Bigfork was horror. Then, as days passed without incident, horror changed to humor, then quiet pride.

On September 25, FWP issued a press release about the grizzly frequenting the Bigfork area, then breathed a sigh of relief as the genial giant left for points south, into the boondocks of Crane Mountain. From there, they expected him to head east toward the Swan Range and his winter den. Instead, the bear returned to Bigfork's apples.

The debate at FWP headquarters must have been fierce: Do we put out another frightening press advisory that the bear is in town? Or do we trap him and move him far away? What if he's too smart for us? What if we can't get him by trapping? What then?

FWP personnel finally snared Number 22 on November 14, nearly two months after he first came to town. At the time, the Dairy Queen Bear was the largest grizzly ever caught during the South Fork Project—650 pounds at age six. They captured him outside the study area, amid civilization.

That, you see, seems the most surprising oddity about the Dairy Queen Bear. Here was a gargantuan grizzly who could take anything he wanted from anyone he wanted at any time he wanted—but didn't. When an alpine huckleberry famine brought him slumming among humans, he remained shy and retiring, nocturnal, doing everything a grizzly must do to survive amid mushrooming humans.

There are some individuals who feel FWP blinked. Officials knew precisely where the bear was, knew how, when, where, and why. Perceiving that the bear was retiring around people, they hoped he'd move on to den in the rugged Swan Range high country. But, according to critics, they made the wrong choices when he was slow to do so: first with the press advisory that a grizzly bear neared Bigfork, then with the decision to trap and remove.

But perhaps we ought to consider what pressure must have been upon those responsible. After all, their debate was about a grizzly bear amid people. Under the wrong circumstances, it's an animal that can maim and marinate all in one lazy motion. Imagine the hue and cry if the Dairy Queen Bear had chosen to open up the Dairy Queen, either during or outside

Grizzly Country

working hours. What if a child was injured?

For that matter, what if some frightened property owner shot the bear? Was the decision as much for the bear's sake as for the humans surrounding him? After all, biologists did allow the bear to roam the roads of Bigfork for nearly two months. How much blood are responsible managers and biologists expected to sweat?

"Keeper of the Land" © 1990 Robert Bateman. Artwork courtesy of the artist and Mill Pond Press, Venice, FL 34292-3505.

"Take the bear's radio collar off," one interviewee said. "They can't worry about his being here if they don't know."

FWP trappers transported the giant bear nearly 150 road miles from Bigfork. They dropped him off near the Continental Divide, south of Glacier National Park.

Apparently confused after release, Digger wandered over the divide, into waters that flowed to the Atlantic. Biologists radio-tracking the bear worried that he might stray beyond the mountainous part of the Two Medicine drainage into ranchland bordering the Rocky Mountain Front, or even onto the Blackfeet Reservation.

But he's a traveling bear, that Digger. Both the Flathead's South and Middle Fork drainages are over a hundred miles long. Mountain ranges tower between. Yet clambering 20 miles over 10-foot snowdrifts and 8,000-foot mountain peaks took Digger little more effort than one evening's stroll.

At last getting his compass set, the big bear turned from the eastern plains to homing strains. He journeyed through ever-deepening snow, over two mountain ranges, to his old stomping grounds, to a mountain thrusting to the sky east of Hungry Horse Reservoir. There he dug his den beneath the roots of a huge spruce tree on the shady side of the mountain. Digger entered the den for his winter's sleep on December 14, 1992.

A widely accepted truism about grizzlies is that when an abundant food source is discovered, a bear never forgets its location. Biologists fully expected Number 22 to hone in on Bigfork upon emerging from his den in the spring. Instead, the bear confounded his trackers by remaining in the mountains surrounding Hungry Horse Reservoir clear through and beyond the May/June breeding season. It wasn't as if the Dairy Queen Bear had difficult choices to make; 1993 proved to be a bumper year for huckleberries everywhere. And it wasn't until mid-July that the big bear wandered over the Swan crest to work his way through one huckleberry patch after another, down to the valley floor.

Moving always at night, the secretive giant made a swift August trip through his relished haunts of the previous year, then resolutely set his nose to the east for the alpine huckleberries he preferred over the still-green Jonathan and winesap apples growing in the Bigfork orchards.

In midsummer of 1994, I asked Rick Mace, FWP's South Fork Grizzly Study team leader, what facts subsequent radio-tracking had disclosed about Digger.

"Actually, he's been pretty boring."

By 1994, Number 22 (alias Digger, James, Gentle Ben, the Dairy Queen Bear) was considered by biologist-trappers to be the dominant male in the study area. Huckleberries, though spotty, were generally adequate. And though he twice ranged into the foothills and fringes of Flathead Valley—once in the spring and again in the fall—the bear proved to be as reclusive as ever.

"Why hasn't he gone back to the apple orchards around Bigfork?" I asked.

Mace smiled. "Maybe—just maybe he hasn't had to. Maybe he never really wanted to be there in the first place. Maybe he fed there to survive."

Maybe, maybe not.

I want to believe this bumbling giant is really such a consummate survivor. After all, he's nearing 11 years of age as this chapter is being written in the spring of 1996—as old as most male grizzlies live to be in the wild. Maybe this is one male grizzly who is taking care of himself so well he'll exceed the normal dozen-year span of his contemporaries, to approximate the 25-year life cycle of the females.

This big aging bruin has been trapped many times and shows not nearly the ursine aversion to the experience. As batteries fade and his neck size expands, he's been fitted with many radio collars, and he's been pinpointed with more radio-location fixes than any other grizzly in the study.

Through the close monitoring of his movements through those fixes, Number 22 has provided a plethora of information about bear behavior previously unknown to researchers. During his long life he has often encountered humans, but hasn't been killed because he somehow senses when to retreat. Evidently, the huge bear knows when to hold them and when to fold them.

The incident with the dead horse up on the Red Owl Road is a classic example. Apparently some person or persons unknown abandoned a horse carcass near the end of a forest road. An innocent deer hunter rounded a bend and came eyeball-to-eyeball with a mammoth grizzly lying across the horse carcass. Hunter and grizzly stared at each other for several seconds while the man's knees turned to jelly. Then, showing none of the rage displayed by many bears to a perceived threat to their food source, the giant bruin rose to his feet and ambled into the brush while a panting hunter leaned on his rifle and took great gasps of air so sweet only one experiencing close encounters of a bear kind can ever know.

A swift call to FWP and a quick telemetry check pinpointed Digger on the Red Owl Road, near the dead horse. The carcass was removed, and doing so removed another threat to a bear that's becoming legendary.

Take 1995.

It was another year of mountain huckleberry failure. This time Digger didn't even bother to rotate between high and low country; after all, it was in the lowlands that he found his best foodstuffs. Now, however, the genial giant wasn't alone in his forays to farmland, for trackers monitored a four-year-old male whose radio signals matched locations with Digger's. An apprentice was learning the ropes from the master! Then came the bear invasion. There was the sow with cubs, raiding bird feeders and rural garbage cans in the foothills area between mountain and macadam. And another four-year-old male was trapped behind Mountain Brook School. And a pair of three-year-old twins were trapped from the Swan Hills. What the hell was going on here?

But Number 22 was—and is—seldom seen, his passage hardly known.

There's little doubt he's an ursine anomaly. Supposedly, bears always return to abundant food sources, yet Digger seems erratic. He visited the grain spill, yet never returned. He found abundant apples during a time of hunger, yet did not return until a second huckleberry famine occurred. Does he have reasons for his untypical behavior? He's used the same den twice for hibernation—extremely rare among grizzlies. Instead of flying into a rage when his horse carcass cache was threatened, he abandoned it without resistance.

Thus far, the Dairy Queen Bear has proven unusually opportunistic, extremely canny, and star-crossed lucky. One wonders, is it possible Number 22 is a bear of the future? Has the Dairy Queen Bear exhibited exactly the type of behavior all grizzlies must adopt to survive amid the mushrooming human populations that are predicted to double within the next 60 years? Who can say.

I can say this, however: I hope the riveting drama of Number 22 is far from over. ■

Postscript

I recently asked Tim Manley for an update on Number 22, alias Digger, James, Gentle Ben, the Dairy Queen Bear. Here's the "rest of the story" circa the winter of 1997-98.

The giant bear continues to live as a wraith, still out there, still spending most of his time amid the fleshpots of the civilized Flathead. But, since his four-year-old radio collar ceased transmitting, who can know for certain? The radio apparently powered down while the bear lay asleep during the savage winter of 1996-97.

Number 22 denned that year on the same mountain where he'd denned many times before, entering on November 5—a month ahead of his normal denning cycle. Smart bear, Digger. Even though 20 inches of snow lay in my yard on November 5, I didn't guess how bitter the winter was yet to be. Digger did.

So without a functioning radio collar, how do we know the great bear is still out there?

Tim Manley tells of reports of a giant grizzly flickering through the same haunts Number 22 has utilized for years. One clear sighting on Wolf Creek was of a big silver-tipped grizzly *without a collar*. Manley shrugged, saying the collars are designed to deteriorate after a period. "It was time for Digger's collar to fall away, just as it was time for the radio to quit."

Another indication that Digger is still out there came from my friends the Satterlees, who dwell on the isthmus between Loon and Horseshoe lakes. Apparently a grizzly once again left his calling card in their driveway during the middle of a late summer night, just as the Dairy Queen Bear had been disposed to do.

So he's there and he's without a collar. And unless the giant bear somehow gets out of sync with neighborhood folks who take pride in having the kind of high-quality environment tolerating an occasional grizzly, he'll live the rest of his life without another collar. There's a lot at stake on the bear doing just that.—*Roland Cheek, December 29, 1997*

LOOKING WITHIN TO BECOME A WOMAN OUTDOORS

by Annette Mills

Millie and Tillie stumble into the glen, two misfit hikers about to meet trouble on the trail. Amidst the dappling of sunshine through cottonwoods and aspens, Millie twists her ankle. Her disgusted companion lumbers off in search of help. Alone, Millie finds herself hurt, lost, and unprepared to deal with the circumstances. Yet, seated in a semicircle at the edge of this clearing, swatting at summer flies and listening to Millie chatter to herself, is a group of women. These women are not there to save Millie, but to learn how to avoid making Millie and Tillie's mistakes. The scenario is actually a workshop skit enacted by Chris Dover and Vikki Fenton, wilderness survival instructors for the 1997 session of Montana BOW (Becoming an Outdoors Woman).

During a weekend last August, 49 women participated in the hands-on workshop. In addition to wilderness survival, activities included basic gun handling, Dutch oven cooking, flyfishing, canoeing, map and compass, mountain bike repairs, birds of north-central Montana, beginning rifle, beginning shotgun, and introduction to bow hunting. The workshop was held in the Bear Paw Mountains near Havre, where participants stayed in cabins at Beaver Creek Park and dined on gourmet meals.

LIZ LODMAN

LIZ LODMAN

Canoeing and rifle shooting are two of the classes offered at this year's Becoming an Outdoors Woman Workshop.

The idea behind each BOW activity session is to introduce participants to basic outdoor skills. For instance, Dover and Fenton, experienced members of the Absaroka Search and Rescue, shared their knowledge of survival tips. Dianne McDermand, an

HOW TO BECOME AN OUTDOORS WOMAN

"Montana will be hosting our fifth annual Becoming an Outdoors Woman Workshop this summer," said Liz Lodman, BOW program coordinator for Montana Fish, Wildlife & Parks. "The participants are very excited when they leave the workshop. That kind of response makes it all worthwhile. The outstanding volunteer instructors and support from conservation groups and sportsmen's clubs from around the state help make the workshop a success."

Although designed primarily for women, the workshop is open to anyone at least 18 years of age who is interested in learning outdoor skills. The BOW workshop provides an atmosphere where participants can have fun learning activities that will enhance their enjoyment of the outdoors.

The 1998 BOW workshop is scheduled for July 10, 11, and 12 near Seeley Lake. To receive registration information, send your name and address by April 1 to: FWP-BOW, P.O. Box 200701, Helena, MT 59620-0701; or call (406) 444-2615. Space is limited and workshops fill up quickly.

Participants choose four classes to attend during the workshop. Some typical classes include the following:

Bowhunting
Outdoor Survival
Rifle and Shotgun Basics
Canoeing
Firearm Safety
Flyfishing
Fly Tying
Map and Compass
Outdoor Cooking
Camping Basics

American Canoe Association instructor who led BOW's introduction to canoeing class, stressed the importance of learning the basics.

According to Liz Lodman, Montana Fish, Wildlife & Parks coordinator of Montana BOW, many factors keep women from venturing outdoors in the first place. Perhaps they were never exposed to the skills required for activities like hunting or mountain biking. Some of last year's participants, like Diane Goff of Augusta, claimed they didn't want to be taught by their spouses. She said, "My husband flyfishes, but he doesn't teach well. So I'm here to save my marriage!"

Whatever their reasons for attending BOW, participants have to look within to find their own foundation upon which they can create their "outdoor" selves. It's a form of self-discovery as much as a lesson in rough scoring an elk's antlers or aiming a rifle.

Lexa Lee, a participant from Great Falls, said simply, "I decided there were some things I needed to know." Other women voiced this same determination to take charge of their outdoor interests. Dena Johnson, also of Great Falls, explained that she wanted to "get back in touch with the reason I came to Montana."

Darrel Johnson, a BOW instructor whose specialty is Dutch oven cooking, admires the women who attend these BOW workshops. He believes that people need to spread their wings and try something new. "I haven't met a lady yet who hasn't enjoyed her experiences at BOW," he said. Everyone enjoyed the social hour hors d'oeuvres like pepperoni-stuffed mushrooms and cherry cobbler prepared by Johnson and his students.

Fun and the chance to learn outdoor skills may have motivated the 49 participants to spend a weekend at Montana BOW, but the empowering spirit of the workshop made it a success for all involved. As one enthusiastic participant put it, "I want to do it all! Now I know I can."

Hamilton game warden Doug Johnson (center) received a Medal of Valor award in 1997 for his part in rescuing four canoeists from the runoff-swollen Bitterroot River. Sponsored by the Montana Newspaper Association, the Medal of Valor is awarded to Montanans who try to save the lives of others and put their own lives at risk in the process. Pictured with Johnson are Beate Galda, administrator of FWP's Law Enforcement Division, and Mac Long, warden captain for the Missoula region.

Watchable Wildlife Needs Your Support

Montana's Watchable Wildlife Program needs your help! Since 1983 this program has relied heavily on a state income tax checkoff for funding (Montana income tax forms include a line and box for checkoff contributions). The checkoff is a tax-deductible contribution available to all Montana taxpayers.

In 1983, Montana had more than 6,600 taxpayers contributing to the checkoff with revenues exceeding $35,000. In 1996, taxpayers contributed only $16,081 to the wildlife checkoff. There is a law requiring the wildlife checkoff to be dropped from the tax form if the fund receives under $20,000 in two consecutive years. As a result, this year is crucial. Montana's Watchable Wildlife Program may eventually be discontinued if this checkoff is dropped from Montana's tax forms.

Montana Fish, Wildlife & Parks has set a high priority on helping Montanans better appreciate their natural heritage through use of checkoff dollars to support education, recreation, and conservation. Your contribution will assure that all Montanans, young and old, can better enjoy and appreciate the diversity of our nongame wildlife. Making a donation will:

•Provide opportunities for children

Do Something Wild

in your community to take wildlife viewing field trips.

•Continue Project Feeder Watch, which places birdfeeders and birdhouses at Montana's nursing homes.

•Furnish educational exhibits at wildlife viewing sites.

•Supply informative brochures, viewing guides, posters, ID guides, wildlife lists, and the *Montana Bird Distribution* book.

•Support wildlife viewing partnerships with private landowners and public agencies.

These are just a few of many projects supported by the Watchable Wildlife Program and program partners. **Mark the box and make a donation that makes a difference.** Support Watchable Wildlife on your 1997 Montana income tax return.

Long-time FWP Administrators Retire

Robert Martinka, a 27-year field and administrative veteran of FWP, and Jerry Wells, a 22-year career official, retired at the end of 1997.

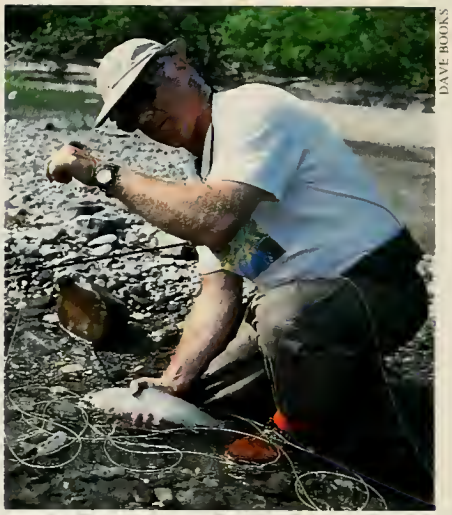
Martinka, who began his career as a wildlife biologist in Harlowton and White Sulphur Springs, was transferred in the mid-1970s to Miles City and Livingston where he supervised the agency's coal and energy extraction assessment projects and contributed to the landmark Yellowstone River water reservations. His efforts during that period were extremely important in preserving the Yellowstone in its free-flowing state.

During the late 1970s and early 1980s, Martinka's efforts shifted to the Rocky Mountain Front, where he helped develop guidelines for oil and gas exploration and production that remain some of the most innovative ever established. Later, during the mid- to late 1980s, he designed and implemented FWP's upland game bird habitat enhancement program.

According to FWP Director Patrick Graham, that effort, as well as his untiring efforts to ensure that federal farm programs would take the needs of wildlife and their habitats into account, placed Montana's upland game bird management program on a path to parity with the agency's other wildlife management programs.

DAVE BOOKS

Jerry Wells


DAVE BOOKS

Bob Martinka

A short time later he was assigned the regional supervisor position in Bozeman, and subsequently returned to FWP's Helena headquarters to assume the duties of associate director.

Graham further noted that in all of his positions, "Bob's dealings with agency personnel and the public earned the highest praise and respect. He enjoyed an unequaled rapport with supervisors and was frequently sought for guidance not only because of his knowledge of the issues, but also because of his ability to provide astute counsel when tough decisions had to be made."

Wells, who began his career as a fisheries field worker in Miles City, later moved to Bozeman to document the impacts of dewatering and land use on trout populations in southwestern Montana streams and rivers. During his next assignment as a fisheries biologist in Dillon he was responsible for waters in the Jefferson River drainage. In this capacity he collected initial data on fluvial Arctic grayling populations in the Big Hole River, an effort that set the stage for today's recovery efforts for the species.

In 1981 Wells was promoted to fisheries manager in FWP's Region 3, and in 1988 became regional supervisor for Region 2. In his last assignment he served as administrator of FWP's Field Services Division in Helena.

According to Graham, it was in this capacity that Wells perhaps left his most lasting legacy to the people and wildlife populations of Montana. "As administrator of the department's lands program for most of the past decade, Jerry guided this agency to a position of national prominence in the wildlife habitat acquisition arena. Over the last four years, his belief in the value of conservation easements as vehicles for preserving wildlife habitat and public access has ensured that nearly 120,000 acres of vital wildlife habitat in Montana will be protected for future generations of Montanans."

Graham also noted that as Field Services Division administrator Wells was instrumental in creating and expanding FWP's public hunting access program, which now boasts over 900 cooperating landowners and 7.5 million enrolled acres.

Hunter Behavior Advisory Council Established

Sixteen Montanans from across the state have been selected to serve on FWP's Hunter Behavior Advisory Council. "With nearly 90 candidates to consider, the final selection process was very difficult," said FWP Director Pat Graham. "We believe the 16 Montanans who have agreed to conduct this discussion have the right mix of interests, backgrounds, geographic location, and connection to their communities to take on the issue and to

provide us with recommendations by December."

The advisory council will lead a statewide effort to involve local residents and groups in identifying, defining, and recommending solutions to hunting behavior problems in Montana. The establishment of the council is in response to recommendations made by the original Private Land/Public Wildlife Advisory Council, and requests by hunters, landowners, the FWP Commission, and FWP wardens and biologists that FWP examine today's hunting environment from the standpoints of sportsmanship, land access, and wildlife management.

"The future of hunting in this country will not be determined by anti-hunters," Graham said. "It will be determined by how the majority of people in this country who do not hunt view hunters. Irresponsible actions by a few can ruin opportunities to hunt on private land for all hunters."

The council members are:

Elaine Allestad, Big Timber—rancher; Sweet Grass County Commissioner; former FWP Commissioner.

John Berger, Bozeman—sportsman; owner and operator of Berger Taxidermy.

Don Rothwell, Kalispell—hunter; hunter education instructor; participant in Germany's *Jaegermeister* program.

Donald Dvoroznak, Thompson Falls—hunter; member of Montana Bowhunters Association.

Chad Huddleston (ex-officio member), Missoula—UM graduate student in anthropology studying the behavior of hunters in North America and the cultural rules guiding that behavior.

Connie Lord, Philipsburg—rancher and block management cooperator; member of Montana Stockgrowers Association.

Judge Greg Mohr, Sidney—hunter; Justice of the Peace; chief bowhunter education instructor for Richland County.

Dan Peters, Butte—hunter; retired principal of Butte High School; member of Skyline Sportsmen's Association.

Jim Posewitz, Helena—executive director of Orion: The Hunter's Institute; president of Prickly Pear Sportsmen's Association; member of Montana Wildlife Federation.

Robert Reukauf, Terry—rancher and block management cooperator.

Mary Ellen Schnur, Deep Creek—outfitter and rancher; member of Montana Guides and Outfitters Association.

David Smith, Miles City—rancher and block management cooperator.

Michael Sprague, Great Falls—hunter.

Steve Woodruff, Missoula—editor for *The Missoulian*; hunter; member of Big Sky Upland Bird Association.

Larry Whitmyer, Jr., Billings—MSU-Billings student; hunter; member of Montana Wildlife Federation, Billings Rod & Gun Club; Rocky Mountain Elk Foundation; Rimrock 4x4 Club.

Janice L. Youngbauer, Lewistown—hunter; secretary of Lewistown Bowhunters Association.

Graham said he expects the council will conduct one of the most public discussions of hunter ethics and behavior ever sanctioned by a state wildlife agency. "If the response to our call for nominations for citizens to serve on this council is any indication, and I think it is, public interest is extraordinarily high," he said. Graham urged the group to work toward reaching four goals:

(1) Identifying specific unethical behaviors that are most troublesome in Montana.

(2) Determining how hunter behavior affects private and public land access.

(3) Providing the hunting community—by December 1998 and through FWP—with recommendations for teaching and advocating ethical hunting in Montana that will enable hunters to maintain public support for hunting by practicing and publicly advocating responsible hunting activities and behaviors.

(4) Recommending ways to improve identified hunter behavior problems in the least regulatory way possible.

DAVE BOOKS

Future generations of hunters will be affected by public perception of hunting ethics and behavior. To help maintain public support, a new advisory council will examine hunting from the standpoint of sportsmanship and recommend solutions to problems.

ROY HASSINGER: THE ESSENCE OF VOLUNTEERISM

by John Fraley
Region 1 Information Officer
Conservation Education Division

Roy Hassinger loves fishing and everything about it. Some might say he goes overboard in his angling zeal. Consider the fact that one of his favorite books is *Nightcrawler Secrets*, a book which deals exclusively with worms as fishing bait.

"I enjoy fishing," says Roy, "But seeing a kid catch a fish is my favorite part of the sport."

Roy has demonstrated his dedication to youth angler education throughout his life. And for years, he has been the main mover behind northwest Montana's successful youth angler education programs.

One of Roy's most impressive successes has been the Flathead Valley Junior Bass Club. Nearly two dozen young anglers ages 9 to 15 attend regular meetings and conduct their own business. A number of fishing outings are scheduled throughout the year. The young members learn all about fishing as a positive family activity.

Junior Bass Club members are unanimous in their praise for Roy's efforts. "It's cool that he puts his time in for kids in this club," says Zach Lanfear, 11, a member of the Junior Bass Club for two years. "He's found something that he likes and believes in and he's dedicated his life to it."

Zach's dad, Bob Lanfear, believes that Roy was made to work with kids. "It's important to him that kids get out and experience the outdoors," says Lanfear. "He's easy-going and never lets things bother him. He never gets impatient with them."

To illustrate Roy's patience, Lanfear tells a story of Roy's reaction to losing an expensive piece of fishing tackle. "Once, when we were fishing on Roy's boat, a guy forgot to lock down Roy's downrigger and it ended up on the bottom of the lake. Roy never reacted, just said, 'Oh, well.'"

JOHN FRALEY

Youth angler education volunteer Roy Hassinger (holding fishing rod) and Evergreen Elementary teacher Judy Sander (far right) have teamed up to bring the "Hooked on Fishing, Not on Drugs" program to northwestern Montana schools.

Tyler Brown, an 11-year-old member of the Junior Bass Club, says that Roy is the club's heart. "He organizes tournaments, goes around to stores for donations, and helps kids. He's helped me learn how to fish more than anyone else."

Brandon Dwyer, age 13, admits to being a fishing fanatic and sees the club as a positive social outlet. "I like the club because I learn more about fishing and make friends. Roy is really good, patient, and helpful with the kids. He's pretty devoted to it."

Brandon's sister, Lizzie, was appointed the club's treasurer because she is good with numbers. "Roy puts a lot of his time into the club and into teaching us more about fishing," she says. "He makes it fun."

Roy's work with youth angler education has helped bring a successful education program to northwestern Montana schools. He has worked extensively with Evergreen Elementary teacher Judy Sander on the national "Hooked on Fishing, Not on Drugs" program. Sander says that Roy's greatest strength is his ability to work with special-needs kids. "I noticed right away that he could relate to them," says Sander. "He's so patient, and has a special way with those kids. That's major, I think."

Sander says that in addition to taking three Evergreen classes on several fishing trips each, Roy has built rod holders for rods used by the 27 students in her class. The holders are mounted in the classroom with the rod numbers on the slots. "The kids think it's really cool," says Sander.

With Roy and Judy teaming up and piloting the Hooked on Fishing program, the number of northwest Montana classrooms adopting the year-round program has grown to 32, and the statewide number has increased to nearly 50.

When asked why he devotes so much time to youth angling, Roy points to his roots. He says fishing trips with his father established his lifelong interest in fishing. He and his dad fished for bullheads and perch in Wisconsin. As Roy got a little older, he

rode his bike to ponds in the summer and fished nearly every day.

During his 21 years in the Air Force, says Roy, "I fished wherever I went." He took his daughters, now grown, fishing whenever they would go with him. His mentoring must have worked, because his 29-year-old daughter asked him for a new fishing rod for Christmas. He enjoys taking his grandchildren fishing when they visit.

"I had such a happy childhood, hunting and fishing," says Roy. "I feel for the kids today who don't have as much opportunity to do it."

Roy's advice to parents who want to instill a love of fishing and of the outdoors in their children is to make it a fun experience. "Let them goof around a bit; don't make it like work. Some kids will take to it, some won't. You have to accept that."

Besides fishing with his daughters, Roy often fished with a number of foster children he and his wife, Bernie, hosted. He believes that his work with children will pay benefits to the tradition of angling.

"Take a kid fishing today and when they are older, they'll support fishing," he says. "Even if it doesn't turn them into anglers, they will understand why people fish and that it's alright."

Roy says that when a kid catches a nice fish, the memory will stick forever. "I got a letter from a foster kid who used to live with us," he says. "He mentioned a fishing trip 20 years ago on the Middle Fork of the Flathead River. That says it all to me."

In the end, it's Roy's love of angling and the outdoors, and his desire to share it with others, that keeps him coming back to the kids. "If I weren't taking all these kids fishing, I'd just be going out myself anyway," he says.

JOHN PRALEY

Roy's advice to parents who want to instill a love of fishing in their children: "Let them goof around a bit...make it fun."

Readers Respond

Where Were Those Photos Taken?

I am a U.S. Marine on active duty, so I currently visit Montana through your wonderful magazine. I look forward to eventually retiring in Montana. I have 26 years on active duty, so retirement will come sooner than later. I have difficulty with only one small area of your magazine. The majority of the time I can't figure out the location of the beautiful pictures.

For example, in the January/February 1998 issue on page 12, Freezout Lake is nowhere to be found in my atlas or on my state map. Pages 18 and 20 are the same [Paradise Valley, Missouri River near Hardy].

I would like to recommend that you add a state map to each issue with a corresponding numbered index for your pictures. This would be of great help to me and I hope many others who are not familiar with Montana. Also those of us who must enjoy Montana from a distance.

My family and I regularly sit down with your magazine, our atlas, state map, and spend hours discussing your articles.

Please keep up the good work. But for those of us "geography illiterates" please consider my recommendation.

Thank you for your time.—*Sergeant Major William B. Hartley, U.S. Marine Corps*

Your point is well taken—we do often assume our readers will be familiar with Montana geography and place names. We'll try to be more descriptive with photo captions in the future. By the way, Freezout Lake is just outside of Fairfield, about 35 miles west of Great Falls. Paradise Valley is the Yellowstone River Valley between Livingston and Yellowstone National Park. Hardy is on the Missouri River about halfway between Helena and Great Falls (north of Craig and south of Cascade).—Editor

Restore the Bison

William Phippen's article in the November/December 1997 issue concerning 60 years of wildlife recovery in Montana makes a good point that sportsmen and women have provided the funds during this century to promote the restoration of several game species. Not mentioned in the article, however, is that Montana's largest and most abundant big game species prior to settlement—the bison—has not received any money for restoration. There are many areas in Montana where bison could be reintroduced. Maybe this could be a priority project for Montana Fish, Wildlife & Parks in the coming century.—*Craig J. Knowles, Boulder*

BOOKSHELF

MAYFLIES, by Malcolm Knopp and Robert Cormier, Greycliff Publishing Co., P.O. Box 1273, Helena, MT 59624 (1-800-874-4171); 1997, 384 pages, hard cover, $49.95.

As the authors state in the introductory pages, "*Mayflies* is a book written for novice and expert flyfishers who wish to understand the fundamentals of mayfly entomology and how to effectively fish mayfly species inhabiting the trout waters of North America." It contains more than 200 detailed illustrations, 41 black-and-white photos, four pages of color plates, and 39 hatch charts. This is a concisely written, scientifically accurate, and beautifully illustrated book that should, as flyfishing expert Gary LaFontaine asserts in the foreword, "stand as the modern blueprint for mastering mayfly situations."

THE YELLOWSTONE FLYFISHING GUIDE, by Craig Mathews and Clayton Molinero, The Lyons Press, 31 West 21st Street, New York, NY 10010; 1997, 156 pages, soft cover, $16.95.

A complete and authoritative guide to the more than 100 lakes and 1,000 miles of streams in Yellowstone National Park, the book includes information on the park's seven species of gamefish and when and where to fish for them. Rivers, streams, lakes, and ponds are described for each of four geographic quadrants within the park. The description for each water body includes helpful data on access points, fish species and size, and local conditions. Insect emergence charts are included for all major waters, along with recommended fly patterns.

SEASONS OF THE BIGHORN, AN ANGLER'S YEAR, text by George Kelly and photography by Barry & Cathy Beck, Willow Creek Press, P.O. Box 147, Minocqua, WI 54548 (1-800-850-9453); 1997, 160 pages, hard cover, $29.50.

The first in Willow Creek's Great American Rivers series, *Seasons of the Bighorn* reveals the special magic of this Montana river through the eyes of resident angler/writer George Kelly and the dazzling photography of Barry and Cathy Beck. Kelly's narrative takes the reader through the four seasons of the Bighorn, providing useful information on flyfishing techniques, equipment, and hatches, as well as the river's flora and fauna. The Becks' 170 color photos depict this prairie river in its many moods and showcase its spectacular trout fishing.

FLYFISHER'S GUIDE TO MONTANA, by Greg Thomas, Wilderness Adventures Press, P.O. Box 627, Gallatin Gateway, MT 59730 (1-800-925-3339); 1997, 300 pages, soft cover, $26.95.

This comprehensive guide covers all the main rivers, spring creeks, and lakes of interest to flyfishers in Montana. Each river and lake is described in terms of fish, tackle, techniques, hatches, peak seasons, and fly patterns. Also included are more than 40 detailed river and lake maps, numerous black-and-white photos, and a wealth of information on access points, campgrounds, fly shops, guides and outfitters, and lodges. Resident and nonresident anglers alike will find the maps and hatch charts especially useful; nonresidents, especially, will appreciate the information on trip planning, airports, hotels, and restaurants.

GUIDING ELLIOTT, by Robert Lee, The Lyons Press, 31 West 21st Street, New York, NY 10010; 1997, 126 pages, hard cover, $22.95.

A first novel by Missoula author Robert Lee, *Guiding Elliott* is the hilarious account of an "old school" Montana fishing guide who finds himself bumping up against the new West. Despite old-fashioned opinions and sexist views that get him in a heap of trouble, guide Donnie Phillips is a likable bungler whose good intentions and talent for wood carving eventually see him through some tough times. *Guiding Elliott* pokes fun at everything from fishing guides to sexism to vegetarianism—it's a great read for anyone who enjoys fishing or just a good laugh.

LOVE OF LABS, Voyageur Press, P.O. Box 338, Stillwater, MN 55082 (1-800-888-9653); 1997, 160 pages, hard cover, $29.95 plus $3.95 shipping.

As anyone who has ever owned (or been owned by) a Labrador retriever will tell you, there are few dogs as lovable as a Lab. The editors of Voyageur Press have produced a great tribute to this remarkable breed, a book filled with stories and color photos devoted to these first-class retrievers and loyal pals. Included are heartwarming tales by British author and veterinarian James Herriot and American authors Mel Ellis, John Madson, Gene Hill, David Morine, Dion Henderson, and Bill Tarrant. Whether your favorite Lab is a hunting companion or just a family pet, you'll love this book.

FISHING DRY FLIES FOR TROUT ON RIVERS AND STREAMS, by Art Lee, Human Kinetics, P.O. Box 5076, Champaign, IL 61825-5076 (217-351-5076); 1997, 272 pages, hard cover, $24.95.

Whether you're new to flyfishing or a seasoned angler, you'll learn much from this how-to book by consummate angler and writer Art Lee. With the help of numerous illustrations and photos, it explains the principal parts of a trout stream and the nuances of reading trout water, fly presentation, and matching the hatch. Other chapters include helpful tips on clothing and gear, leaders, fly patterns, care of flies, knots, and hooking, playing, and landing trout. The author's commonsense approach to flyfishing and readable writing style make this a valuable addition to any angler's library.

Contributors

"In Montana," says **Sam Curtis**, "we are witness to countless incredible journeys through the course of every year: the honking chevrons of geese undulating across our autumn skies, the lines of elk winding down from the high country after heavy snows, the first colorful arrivals of songbirds at our feeders in spring, even the beeline of honeybees to their favorite flowers." How these wild creatures find their way around so unerringly has baffled scientists for centuries, but recent studies have begun to unravel some of the mystery. For fascinating examples of animal, bird, and insect migration, and for insights into why we humans tend to get lost so easily, turn to "Incredible Journeys" on page 2. Curtis is a free-lancer from Bozeman whose natural history pieces often find their way to *Montana Outdoors*.

Richie

Does a road trip through beautiful country with a chance of seeing eagles, ospreys, elk, moose, mountain goats, trumpeter swans, and other wild creatures appeal to you? If so, you'll like **Deborah Richie's** "Wildlife Viewing Tour Guide" to the Madison and Gallatin Rivers (p. 6). She recommends a 200-mile loop tour beginning and ending in Bozeman, with stops at several state wildlife management areas and national forest sites along the way. Richie, a former wildlife interpretive specialist with FWP and watchable wildlife coordinator for the U.S. Forest Service, operates Deborah Richie Communications in Missoula.

Artist Joe Thornbrugh of Victor recently won the Montana waterfowl stamp contest for the *fifth* time (he also won the stamp's 1986, 1990, 1991, and 1997 competitions). Based on the decision of a panel of judges in Helena on November 26, his painting of a pair of gadwalls in a prairie pothole setting will be reproduced as Montana's 1998 waterfowl stamp (p. 17). What makes Thornbrugh a perennial winner? According to FWP information officer **William Phippen**, "Thornbrugh's paintings reflect the painstaking research he undertakes on his subjects before he ever touches a brush to canvas." Phippen works for FWP's Conservation Education Division in Helena.

Huston

For years most biologists assumed that Montana had no native rainbow trout—that all the state's rainbows were descendents of hatchery transplants. But Elmer Phillips, foreman of the Libby State Fish Hatchery in the 1930s, thought otherwise, as did two enterprising students from Carroll College in the late 1970s. Indeed, says **Joe Huston**, ongoing genetic tests begun in 1977 have confirmed that redband rainbow trout are native to a portion of the Kootenai River drainage. His article, which describes the origin and distribution of "Montana's Native Rainbows" in Montana, begins on page 20. Huston is a retired FWP fisheries biologist who lives in Kalispell.

FWP's South Fork Grizzly Study in northwestern Montana has revealed a wealth of new information about grizzlies, says **Roland Cheek**, who dedicated his new book, *Learning to Talk Bear*, to "those selfless field biologists who study bears." One chapter, reprinted in this issue, details

Cheek

the fascinating story of an unusual grizzly called "The Dairy Queen Bear" (p. 24). "Thus far," says Cheek, the Dairy Queen Bear has proven unusually opportunistic, extremely canny, and star-crossed lucky. Has the Dairy Queen Bear exhibited exactly the type of behavior all grizzlies must adopt to survive amid the mushrooming human populations that are predicted to double within the next 60 years?" Cheek, who was an outfitter in the Bob Marshall Wilderness for 20 years, now writes full-time from his home in Columbia Falls and does a nationally syndicated radio show, "Trails to Outdoor Adventure."

MO thanks the following photographers and artists for their contributions to this issue: **Mike Barlow** and **George Wuerthner**, Livingston; **Erwin & Peggy Bauer**, Sequim, WA; **Pete & Alice Bengeyfield** and **W. Steve Sherman**, Dillon; **Diane Ensign**, **Phil Farnes**, **Dusan Smetana**, and **Dale C. Spartas**, Bozeman; **Chuck Haney**, Whitefish; **Larry Javorsky**, Hamilton; **Donald M. Jones**, Troy; **John Lambing**, Helena; **Daniel D. Lamoreux**, Victor, ID; **John McNeal**, Pompeys Pillar; **Jim Mepham**, Choteau; **Mill Pond Press**, Venice, FL; **Kerry Nickou**, Browning; **Lance R. Peck**, Cody, WY; **Conrad Rowe**, Seeley Lake; **Barbara Thomas** and **Jan L. Wassink**, Kalispell; **Steve Torna**, Hardin; **Tom Vetter**, Big Sky; **Scott Wheeler**, Butte; **Michael J. Wolf**, Missoula. Thanks also to the following employees who work for the department: **Donna Campbell** and **Liz Lodman**, Helena; **John Fraley**, Kalispell; and **Grant Grisak**, Bozeman.

03

7 44040 88810 4